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OF

PSYCHOLOGY AND PHILOSOPHY

I.—THE REFUTATION OF REALISM.

BY W. T. STACE.

MORE than thirty years have now elapsed since Prof. Moore published in *MIND* his famous article, "The Refutation of Idealism". Therewith the curtain rose upon the episode of contemporary British realism. After three decades perhaps the time is now ripe for the inauguration of another episode. And it is but fitting that "The Refutation of Realism" should appear on the same stage as its famous predecessor.

I shall not gird at realism because its exponents disagree among themselves as to what precisely their philosophy teaches. But disagreements certainly exist, and they make it difficult for a would-be refuter to know precisely what is the proposition which he ought to refute. It is far from certain that all idealists would agree that the idealism which Prof. Moore purported to refute represented adequately, or even inadequately, their views. And it may be that a similar criticism will be urged by realists against what I shall here have to say. But I must take my courage in my hands. Realists, it seems to me, agree in asserting that "some entities sometimes exist without being experienced by any finite mind". This, at any rate, is the proposition which I shall undertake to refute.

I insert the word "finite" in this formula because if I wrote "some entities exist without being experienced by any mind", it might be objected that the proposition so framed would imply that some entities exist of which God is ignorant, if there is

such a being as God, and that it is not certain that all realists would wish to assert this. I think that we can very well leave God out of the discussion. In front of me is a piece of paper. I assume that the realist believes that this paper will continue to exist when it is put away in my desk for the night, and when no finite mind is experiencing it. He *may* also believe that it will continue to exist even if God is not experiencing it. But he must *at least* assert that it will exist when no finite mind is experiencing it. That, I think, is essential to his position. And therefore to refute that proposition will be to refute realism. In what follows, therefore, when I speak of minds I must be understood as referring to finite minds.

Possibly I shall be told that although realists probably do as a matter of fact believe that some entities exist unexperienced, yet this is not the essence of realism. Its essence, it may be said, is the belief that the relation between knowledge and its object is such that the knowledge makes no difference to the object, so that the object *might* exist without being known, whether as a matter of fact it does so exist or not.

But it would seem that there could be no point in asserting that entities *might* exist unexperienced, unless as a matter of fact they at least sometimes do so exist. To prove that the universe *might* have the property X, if as a matter of fact the universe has no such property, would seem to be a useless proceeding which no philosophy surely would take as its central contribution to truth. And I think that the only reason why realists are anxious to show that objects are such, and that the relation between knowledge and object is such, that objects might exist unexperienced, is that they think that this will lead on to the belief that objects actually do exist unexperienced. They have been anxious to prove that the existence of objects is not dependent on being experienced by minds because they wished to draw the conclusion that objects exist unexperienced. Hence I think that I am correct in saying that the essential proposition of realism, which has to be refuted, is that "some entities sometimes exist without being experienced by any finite mind".

Now, lest I should be misunderstood, I will state clearly at the outset that I cannot prove that no entities exist without being experienced by minds. For all I know completely unexperienced entities may exist, but what I shall assert is that we have not the slightest reason for believing that they do exist. And from this it will follow that the realistic position that they do exist is perfectly groundless and gratuitous, and one which ought not to be believed. It will be in exactly the same posi-

tion as the proposition "there is a unicorn on the planet Mars". I cannot prove that there is no unicorn on Mars. But since there is not the slightest reason to suppose that there is one, it is a proposition which ought not to be believed.

And still further to clarify the issue, I will say that I shall not be discussing in this paper whether sense-objects are "mental". My personal opinion is that this question is a pointless one, but that if I am forced to answer it with a "yes" or "no", I should do so by saying that they are not mental; just as, if I were forced to answer the pointless question whether the mind is an elephant, I should have to answer that it is not an elephant. I will, in fact, assume for the purposes of this paper that sense-objects, whether they be colour patches or other sense-data, or objects, are not mental. My position will then be as follows: There is absolutely no reason for asserting that these non-mental, or physical, entities ever exist except when they are being experienced, and the proposition that they do so exist is utterly groundless and gratuitous, and one which ought not to be believed.

The refutation of realism will therefore be sufficiently accomplished if it can be shown that we do *not* know that any single entity exists unexperienced. And that is what I shall in this paper endeavour to show. I shall inquire how we could possibly know that unexperienced entities exist, even if, as a matter of fact, they do exist. And I shall show that there is no possible way in which we could know this, and that therefore we do *not* know it, and have no reason to believe it.

For the sake of clearness, let us take once again the concrete example of the piece of paper. I am at this moment experiencing it, and at this moment it exists, but how can I know that it existed last night in my desk when, so far as I know, no mind was experiencing it? How can I know that it will continue to exist to-night when there is no one in the room? The knowledge of these alleged facts is what the realists assert that they possess. And the question is, Whence could such knowledge have been obtained, and how can it be justified? What I assert is that it is absolutely impossible to have any such knowledge.

There are only two ways in which it could be asserted that the existence of any sense-object can be established. One is by sense-perception, the other by inference from sense-perception. I know of the existence of this paper *now* because I see it. I am supposed to know of the existence of the other side of the moon, which no one has ever seen, by inference from various actual astronomical observations, that is, by inference from things actually experienced. There are no other ways of proving the

existence of a sense-object. Is either of them possible in the present case?

1. *Sense-perception*. I obviously cannot know by perception the existence of the paper when no one is experiencing it. For that would be self-contradictory. It would amount to asserting that I can experience the unexperienced.

2. *Inference*. Nor is it possible to prove by inference the existence of the paper when no mind is experiencing it. For how can I possibly pass by inference from the particular fact of the existence of the paper now, when I am experiencing it, to the quite different particular fact of the existence of the paper yesterday or to-morrow, when neither I nor any other mind is experiencing it? Strictly speaking, the onus of proving that such an inference is impossible is not on me. The onus of proving that it is possible is upon anyone who asserts it, and I am entitled to sit back and wait until someone comes forward with such an alleged proof. Many realists who know their business admit that no valid inference from an experienced to an unexperienced existence is possible. Thus Mr. Russell says, "Belief in the existence of things outside my own biography must, from the standpoint of theoretical logic, be regarded as a prejudice, not as a well-grounded theory."¹

I might therefore adopt the strategy of masterly inaction. But I prefer to carry the war into the enemy's camp. I propose to *prove* that no proof of the existence of unexperienced objects is possible.

It is clear in the first place that any supposed reasoning could not be inductive. Inductive reasoning proceeds always upon the basis that what has been found in certain observed cases to be true will also be true in unobserved cases. But there is no single case in which it has been observed to be true that an experienced object continues to exist when it is not being experienced; for, by hypothesis, its existence when it is not being experienced cannot be observed. Induction is generalisation from observed facts, but there is not a single case of an unexperienced existence having been observed on which could be based the generalisation that entities continue to exist when no one is experiencing them. And there is likewise not a single known instance of the existence of an unexperienced entity which could lead me to have even the slightest reason for supposing that this paper ever did exist, or will exist, when no one is experiencing it.

¹ *Analysis of Mind*, p. 133.

Since inductive reasoning is ruled out, the required inference, if there is to be an inference, must be of a formal nature. But deductive inference of all kinds depends upon the principle of consistency. If $P \supset Q$, then we can only prove Q , if P is admitted. From $P \supset Q$, therefore, all that can be deduced is that P and not- Q are inconsistent, and that we cannot hold both P and not- Q together, though we may hold either of them separately.

Hence, if it is alleged that a deductive inference can be drawn from the existence of the paper now, when I am experiencing it, to its existence when no one is experiencing it, this can only mean that to assert together the two propositions, (1) that it exists now, and (2) that it does not exist when no one is experiencing it, is an internally inconsistent position. But there is absolutely no inconsistency between these two propositions. If I believe that nothing whatever exists or ever did or will exist, except my own personal sense-data, this may be a view of the universe which no one would ever hold, but there is absolutely nothing internally inconsistent in it. Therefore, no deductive inference can prove the existence of an unexperienced entity. Therefore, by no reasoning at all, inductive or deductive, can the existence of such an entity be proved.

Nevertheless, arguments have been put forward from time to time by realists which are apparently intended to prove this conclusion. I will deal shortly with those with which I am acquainted. I am not bound to do this, since I have already proved that no proof of the realists' conclusion is possible. And for the same reason, if there are any arguments of this kind with which I am not acquainted, I am under no obligation to disprove them. But it will be better to meet at least the most well-known arguments.

(a) It was Mr. Perry, I believe, who invented the phrase "egocentric predicament". The egocentric predicament was supposed to indicate where lay a fallacy committed by idealists. It consisted in arguing from the fact that it is impossible to discover anything which is not known to the conclusion that all things are known. That any competent idealist ever did use such an argument may well be doubted, but I will waive that point. Mr. Perry's comment was that the egocentric predicament, as employed by idealists, appeared to imply that from our ignorance of unexperienced entities we could conclude to their non-existence, and that to do so is a fallacy.

No doubt such a procedure would be a fallacy. But though Mr. Perry's argument may refute a supposed idealistic argument,

it does not prove anything whatever in favour of realism. It would be a fallacy to argue that, because we have never observed a unicorn on Mars, therefore there is no unicorn there ; but by pointing out this fallacy, one does not prove the existence of a unicorn there. And by pointing out that our ignorance of the existence of unexperienced entities does not prove their non-existence, one does nothing whatever towards proving that unexperienced entities do exist. As regards the unicorn on Mars, the correct position, as far as logic is concerned, is obviously that if anyone asserts that there is a unicorn there, the onus is on him to prove it ; and that until he does prove it, we ought not to believe it to be true. As regards the unexperienced entities, the correct position, as far as logic is concerned, is that if realists assert their existence, the onus is on them to prove it ; and that until they do prove it, we ought not to believe that they exist. Mr. Perry's argument, therefore, proves nothing whatever in favour of realism.

Possibly all this is admitted and understood by realists. But there seems, nevertheless, to have been a tendency to think that the overthrow of the supposed idealistic argument was a very important matter in forwarding the interests of realism. To point out, therefore, that it actually accomplishes nothing seems desirable.

(b) Mr. Lovejoy, in his recent book, *The Revolt Against Dualism*, argues that we can infer, or at least render probable, the existence of things during interperceptual intervals by means of the law of causation. He writes, "The same uniform causal sequences of natural events which may be observed within experience appear to go on in the same manner when not experienced. You build a fire in your grate of a certain quantity of coal, of a certain chemical composition. Whenever you remain in the room there occurs a typical succession of sensible phenomena according to an approximately regular schedule of clock-time ; in, say, half an hour the coal is half consumed ; at the end of the hour the grate contains only ashes. If you build a fire of the same quantity of the same material under the same conditions, leave the room, and return after any given time has elapsed, you get approximately the same sense-experiences as you would have had at the corresponding moment if you had remained in the room. You infer, therefore, that the fire has been burning as usual during your absence, and that being perceived is not a condition necessary for the occurrence of the process."¹

¹ *The Revolt against Dualism*, p. 268.

This argument is simply a *petitio principii*. It assumes that we must believe that the law of causality continues to operate in the universe when no one is observing it. But the law of causality is one aspect of the universe, the unobserved existence of which is the very thing to be proved.

Why must we believe that causation continues to operate during interperceptual intervals? Obviously, the case as regards unexperienced processes and laws is in exactly the same position as the case regarding unexperienced *things*. Just as we cannot perceive unexperienced things, so we cannot perceive unexperienced processes and laws. Just as we cannot infer from anything which we experience the existence of unexperienced things, so we cannot infer from anything we experience the existence of unexperienced processes and laws. There is absolutely no evidence (sense-experience) to show that the fire went on burning during your absence, nor is any inference to that alleged fact possible. Any supposed inference will obviously be based upon our belief that the law of causation operates continuously through time whether observed or unobserved. But this is one of the very things which has to be proved. Nor is there the slightest logical inconsistency in believing that, when you first observe the phenomena, unburnt coal existed, that there followed an interval in which nothing existed, not even a law, and that at the end of the interval ashes began to exist.

No doubt this sounds very absurd and contrary to what we usually believe, but that is nothing to the point. We usually believe that things go on existing when no one is aware of them. But if we are enquiring how this can be *proved*, we must, of course, begin from the position that we do not know it, and therefore that it might not be true.

(c) The distinction between sense-data and our awareness of them, which was first emphasised, so far as I know, by Prof. Moore, has been made the basis of an argument in favour of realism. Green, it is said, is not the same thing as awareness of green. For if we compare a green sense-datum with a blue sense-datum, we find a common element, namely awareness. The awareness must be different from the green because awareness also exists in the case of awareness of blue, and *that* awareness, at any rate, is not green. Therefore, since green is not the same thing as awareness of green, green might exist without awareness. Connected with this argument, too, is the assertion of a special kind of relationship between the awareness and the green.

Possibly this argument proves that green is not "mental". I do not know whether it proves this or not, but the point is

unimportant, since I have already admitted that sense-data are not "mental". But whatever the argument proves, it certainly does *not* prove that unexperienced entities exist. For suppose that it proves that green has the predicate x (which may be "non-mental" or "independent of mind", or anything else you please), it still can only prove that green has the predicate x during the period when green is related to the awareness in the alleged manner, that is, when some mind is aware of the green. It cannot possibly prove anything about green when no mind is aware of it. Therefore, it cannot prove that green exists when no mind is aware of it.

For the sake of clearness, I will put the same point in another way. Suppose we admit that green and awareness of green are two quite different things, and suppose we admit that the relation between them is r —which may stand for the special relation asserted in the argument. Now it is not in any way inconsistent with these admissions to hold that green begins to exist only when awareness of green begins to exist, and that when awareness of green ceases to exist, green ceases to exist. It may be the case that these two quite different things always co-exist, always accompany each other, and are co-terminous in the sense that they always begin and end simultaneously, and that while they co-exist, they have the relation r . And this will be so *whatever* the relation r may be. And not only is this supposition that they always co-exist not at all absurd or arbitrary. It is on the contrary precisely the conclusion to which such evidence as we possess points. For we never have evidence that green exists except when some mind is aware of green. And it will not be asserted that awareness of green exists when green does not exist.

The argument from the distinction between green and the awareness of it, therefore, does nothing whatever towards proving the realist conclusion that some entities exist unexperienced. □

(d) It has also been argued that if we identify a green or a square sense-datum with our awareness of it, then, since awareness is admittedly a state of mind, we shall have to admit that there exist green and square states of mind.

This argument is merely intended to support the previous argument that a sense-datum is different from our awareness of it. And as it has already been shown that this proposition, even if admitted, proves nothing in favour of realism, it is not necessary to say anything further about the present argument.

I will, however, add the following. It is not by any means certain, as is here assumed, that awareness is a state of mind, or indeed that such a thing as a *state* of mind exists. For the mind

is not static. It is active. And what exists in it are *acts* of mind. Now the *attention* involved in being aware of a sense-datum is certainly an act of mind. But it is certainly arguable that *bare* awareness of a sense-datum (if there is such a thing as *bare* awareness) would be identical with the sense-datum and would not be an act of mind. For such bare awareness would be purely passive. In that case, the conclusion that there must exist green or square states of mind would not follow.

Moreover, even if we admit that there exist green and square states of mind, what then? I can see no reason why we should not admit it, except that (1) it is an unusual and unexplored view, and (2) it seems to smack of materialism, although I do not believe that it does really involve materialism. This shows that the whole argument is not really a logical argument at all. It is merely an attempt to throw dust in our eyes by appealing to the popular prejudices against (1) unfamiliar views, and (2) materialism.

It is not possible in the brief space at my disposal to make plausible the suggestions contained in the last two paragraphs. A full discussion of them would be necessary and this I have endeavoured to give elsewhere. In the present place, therefore, I must rely upon the strict logical position, which is, that this argument, since it is merely intended to support argument (c) above, and since argument (c) has already been refuted, proves nothing in favour of realism.

By the preceding discussion, I claim to have proved (1) that the existence of an unexperienced entity cannot be known by perception, (2) that it cannot be known by reasoning, and (3) that the arguments commonly relied upon by realists to prove it are all fallacies.

I think it is not worth while to discuss the possible suggestion that the arguments in favour of realism, although not proving their conclusion rigorously, render that conclusion probable. For what has been shown is that no valid reasoning of *any* kind can possibly exist in favour of this conclusion. Any conceivable reasoning intended to prove that unexperienced entities exist must, it has been shown, be *totally* fallacious. It cannot, therefore, lead even to a probable conclusion. The position, therefore, is that we have not even the faintest reason for believing in the existence of unexperienced entities.

That this is the correct logical position seems to be dimly perceived by many realists themselves, for it is common among them to assert that our belief in unexperienced existences is a "primitive belief", or is founded upon "instinctive belief",

or upon "animal faith". This suggestion is obviously based upon the realisation that we cannot obtain a knowledge of unexperienced existences either from perception or from reasoning. Since this is so, realists are compelled to appeal to instinctive beliefs.

Such a weak position seems hardly to require discussion. A "primitive belief" is merely a belief which we have held for a long time, and may well be false. An "instinctive belief" is in much the same case. An "instinct", so far as I know, is some kind of urge to *action*, not an urge to believe a proposition. And it is therefore questionable whether there are such things as instinctive beliefs in any strict sense, although, of course, no one will deny that we have beliefs the grounds of which are only dimly, or not at all, perceived. Certainly the psychology of such alleged instinctive beliefs has not been adequately investigated. And certainly we have no good ground for supposing that an instinctive belief (if any such exists) might not be false.

And if we have such an instinctive or primitive belief in unexperienced existences, the question must obviously be asked How, When, and Why such a belief arose in the course of our mental evolution. Will it be alleged that the amoeba has this belief? And if not, why and when did it come into existence? Or did it at some arbitrarily determined stage in our evolution descend suddenly upon us out of the blue sky, like the immortal soul itself?

Is it not obvious that to base our belief in unexperienced existences on such grounds is a mere gesture of despair, an admission of the bankruptcy of realism in its attempt to find a rational ground for our beliefs?

Strictly speaking, I have here come to the end of my argument. I have refuted realism by showing that we have absolutely no good reason for believing in its fundamental proposition that entities exist unexperienced. Nothing I have said, of course, goes any distance towards proving that entities do *not* exist unexperienced. That, in my opinion, cannot be proved. The logically correct position is as follows. We have no reason whatever to believe that unexperienced entities exist. We cannot prove that they do not exist. The onus of proof is on those who assert that they do. Therefore, as such proof is impossible, the belief ought not to be entertained, any more than the belief that there is a unicorn on Mars ought to be entertained.

It is no part of the purpose of this essay to do more than arrive at this negative result. But lest it should be thought that this thinking necessarily leads to nothing but a negative result, or

to a pure scepticism, I will indicate in no more than a dozen sentences that there is the possibility of a positive and constructive philosophy arising from it. That positive philosophy I have attempted to work out in detail in another place. Here, I will say no more than the following. Since our belief in unexperienced existences is not to be explained as either (1) a perception, or (2) an inference, or (3) an "instinctive belief", how is it to be explained? I believe that it can only be explained as a mental construction or fiction, a pure assumption which has been adopted, not because there is the slightest evidence for it, but solely because it simplifies our view of the universe. How it simplifies our view of the universe, and by what detailed steps it has arisen, I cannot discuss in this place. But the resulting conception is that, in the last analysis, nothing exists except minds and their sense-data (which are not "mental"), and that human minds have, out of these sense-data, slowly and laboriously constructed the rest of the solid universe of our knowledge. Unexperienced entities can only be said to exist in the sense that minds have chosen by means of a fiction to project them into the void of interperceptual intervals, and thus to construct or create their existence in imagination.

II.—A SECOND REPLY TO MR. JOSEPH.

BY L. SUSAN STEBBING.

MR. JOSEPH'S 'A Defence of Free Thinking in Logistics Resumed' (MIND, October 1933), shows what difficulty we have in understanding each other. We do not manage to speak the same language, so that what makes sense to one of us seems nonsense to the other. This is certainly unfortunate. I realise that I have preferences for certain modes of expression and dislike others. I use the former, Mr. Joseph uses the latter. Such preferences make one too ready to regard an expression which is objectionable to oneself as though it could not be translated into a form which would not be objectionable. This is a mistake. It is futile to accuse an opponent of talking 'nonsense' provided that what he says is capable of being translated in such a way as to make sense. In this further discussion of Mr. Joseph's views I am anxious to exclude, as far as may be possible, any considerations which bear upon what may be called our respective 'styles'. But in making this attempt I have difficulty in determining to what extent our divergence is due to a simple failure to understand what the other has said. Often I have to read some sentence of Mr. Joseph's several times before I even suppose I have understood what he is saying. I am afraid that even then my supposition is frequently mistaken. Mr. Joseph seems to have the same difficulty with regard to what I say. My intention in writing this article is to attempt to remove misunderstandings of this kind. I neither attempt, nor desire, to convert Mr. Joseph to my point of view.

(i) *Functions and Variables*.—The disagreement between Mr. Joseph and myself with regard to what a variable is seems unlikely to be resolved. But some of the criticisms which Mr. Joseph makes are undoubtedly due to a failure to understand what I intended to say. He does not understand what I mean by a 'symbol'; nor, I think, do I understand what he means by a 'common and determinable nature'. I shall consider each of these expressions in turn, with a view to discovering, if possible, what is the point at issue between us.

The attempt to make clearer how I was using 'a symbol' will involve what I should have hoped would be regarded as a tiresome digression. But Mr. Joseph's criticisms show that, however tiresome, it is not a digression. Certainly 'symbol' is ambiguously used, but it had not occurred to me that in the context in which I was using it there was any ambiguity. It seems, however, that there was. I shall accordingly make several distinctions which I should otherwise have taken for granted.

Sometimes we say that, for instance, '⊃' is 'a symbol', with the intention of contrasting this arbitrarily devised mark with 'implies'; we thereupon call 'implies' a 'word', thinking of it as not arbitrarily devised. In such a context the use of the word 'symbol' is not ambiguous, but it is convenient here to replace it by 'ideogram'. An ideogram is, then, a specially devised mark used by someone to refer to something for which no equally convenient symbol is generally accepted. Thus an ideogram is an element in a symbolism devised for some special purpose. Such a symbolism may be called a notation. The example of musical notation will occur to everyone. The symbolism used by the authors of *Principia Mathematica* is a notation containing both Greek and Latin letters. These may be called notational elements; whether a notational element is an ideogram or a letter already familiar will be irrelevant to the use of the symbolism. Unfortunately 'notational elements' may again be used ambiguously. Thus '⊃' (which is an element in a certain notation) may be thought of merely as a shape, or it may be thought of as being used to say something, i.e., as a symbol. To bring out the distinction between these two ways of regarding '⊃', I shall say that in the first case we are thinking of '⊃' as a *mark*, in the second case we are thinking of it as a *symbol*. Even this distinction is not, however, sufficiently precise; it leaves a loophole for irrelevant criticisms. In the most ordinary sense of the word 'mark', there are four horse-shoe shaped marks in the preceding part of this paragraph, but there is only one ideogram indicated by the mark '⊃' whenever the mark '⊃' is used¹ in the way in which Russell intended to use it. When, therefore, I want to think of '⊃' as an ideographic mark in a certain notation in order to contrast it with the ideographic mark '>' (used, for example, by Couturat in the way in which Russell uses '⊃'), I shall call it a '*notational mark*'. Now, it is clear, that neither a mark nor a notational mark, is a symbol. A symbol can occur only in a situation in which someone is using something to refer to some-

¹ It should be observed that 'is used' has systematic ambiguity.

thing else. In this sense the black marks on the pages of *Principia Mathematica* are not symbols, although, in a given context, it may not be ambiguous to say that many pages of *Principia Mathematica* contain symbols the significance of which has to be learnt. When a reader is apprehending the marks on the pages of *Principia Mathematica*, as referring to something, then he is understanding symbols. Even then it is not *the mark* which is a symbol; it is the *mark-as-used*. We cannot strictly say that a mark *becomes* a symbol; a mark can become nothing but itself. It is sometimes convenient to call the *mark* a *symbol*, as when we speak of 'looking up the symbol in the List of Definitions given at the end of Volume I. of the *Principia Mathematica*'. In the same way, it is convenient to say that the word 'aeroplane' is not to be found in Johnson's Dictionary. In this use of the word 'word' we can erase a word from a dictionary. But in the more fundamental sense of 'word', we do not thereby erase the given word from the English language, as I think C. S. Peirce pointed out. In apprehending this last sentence we do not think of the mark—word—as a *mark*; we think of it as a *word*.¹ It is in this sense that I use 'word' and 'symbol'. Words are verbal symbols. To regard the mark as a word is to treat 'word' as 'gift' is treated in notices (often to be found in shop windows before Christmas) calling attention to 'Attractive gifts'. A would-be donor finds this use of 'gifts' highly elliptical. There is no *gift*, unless there be a *donor*, *something given*, and a *recipient*. A doll may be given by someone to someone else, but the doll does not *itself become a gift*; it is a gift only in so far as it is a term in the triadic relation of *giving*. In other words, *being a gift* does not attach to one element of the irreducible triadic relation *giving*. In like manner, although *words* may be said to *have meaning*, yet *meaning* does not attach to one element of the triadic relation *means*. When, therefore, we use 'word' in such a sense that we can say that words have meaning, we are using 'word' in a sense fundamentally different from that in which we can say that a word is to be found on a page, or can be erased, or mispronounced.² The sense in which a word has meaning seems to me to be the fundamental sense of 'word', and it is in that sense that I propose to use the word 'word'.

¹ Cf. *A Modern Introduction to Logic* (2nd edition), Appendix A.

² What I have said about the word as a *mark* can also be said, *mutatis mutandis*, about the word as a *sound*. As Mr. Joseph and I are communicating by written language I have not thought it necessary to encumber the exposition with adding similar remarks about spoken language.

and it was in that sense that I used the word 'symbol' in my previous article, a word being a verbal symbol.

A mark, a notational mark, an ideogram, and a word or symbol must then be sharply distinguished. Of a *mark* we can appropriately say that it is well, or badly, printed, that it is in clarendon type, that it is clearly visible, or not, that it is red, black, or some other colour. It is *only* of a mark that such statements can significantly be made. Since a *notational mark* is a mark, any of the above statements could be significantly made of a notational mark. Since a notational mark is deliberately devised for a special purpose, we can also say that it is well- or ill-devised. Of an ideogram we could say that it is suitably chosen, well-defined, and so on. Of a word we can say that it expresses well, or badly, what is intended to be expressed, that it is used ambiguously, and so on. These remarks apply to what Mr. Joseph says in § 42. We can say of the notational mark 100 that it is better devised than the notational mark C used in the Roman notation for numerals. We can say that $(x + y)^3$ is a better notational mark than $(x + y)(x + y)(x + y)$. We must know the conventions of the notation¹ in order to know that $(x + y)^3$ can be substituted for $(x + y)(x + y)(x + y)$ without any alteration in what is said. But in order to know that $(x + y)^3$ is equivalent to $x^3 + 3x^2y + 3xy^2 + y^3$, we need to know something other than the conventions of the notation which has been adopted. Mr. Joseph seems to think that, on my view, this could not be admitted. On the contrary, I not only admit it, I should have stressed the point, had I not taken it for granted.² Accordingly, I do not in the least deny that 'formulae which use symbols are not about the symbols used'.³ Mr. Joseph's criticism of the view that a variable is a symbol which denotes any one of a class of elements, entirely misses the point owing to his confusion of the mark with the symbol. When he says, 'primarily a variable is something which varies; and the symbol does not vary' (p. 418), and when he asks whether I 'really think that the elements could be correlated *according to a rule* if there were no variable except the symbols which do not vary', he must be thinking of a symbol as a *mark*. In these statements there seem to me

¹ Mr. Joseph's phrase is 'the conventions of a symbolism', but he is clearly using 'a symbolism' here as I use 'a notation'. I do not think he sees the difference between a notational mark and a symbol.

² I dealt with considerations of this kind in my *A Modern Introduction to Logic*, Chap. VIII., § 2.

³ See *loc. cit.*, p. 418.

to be endless confusions. Certainly the mark does not vary.¹ The variable does not vary. Indeed, to say that the variable does not vary or to say that the variable does vary is equally to talk nonsense. What changes are the values. But to use either the word 'varies' or the word 'changes' is unfortunate. It is true that mathematicians often do define a variable as *a number which varies*. This way of speaking has the defect of introducing a vague, extraneous notion of varying, or changing. Were it taken strictly it would be nonsense. A number is an element of a class and does not change. The fundamental notion at the basis of the idea of a variable is that we *can* refer to anyone of a set of elements without referring to a specified one. A constant, as the word is used in mathematics, is a special case of a variable, in which the class in question contains only one member. The *c* in the expression containing ($\forall c$) is like a parameter; it is a variable of a special kind, and since it is neither the dependent nor the independent variable it may be called a free variable.

Mr. Joseph says that 'what varies is the determinable, which is somehow one in all the differing determinates' (p. 421). I find it difficult to understand *how* a *determinable* should be said to vary. I suppose that Mr. Joseph would say that colour *varies* in red, green, etc.; that number *varies* in 1, 2, etc. I cannot make sense of this use of the word 'varies', but I think Mr. Joseph would be committed to the above statements. To understand Mr. Joseph here would be to understand his favourite phrase 'a common and determinable nature'. I have tried repeatedly to translate this phrase in such a way that I could see what it means, but I do not think that I have succeeded. Mr. Joseph says that 'one fundamental issue' between him and myself is 'whether there are universals, or only classes' (p. 421). In a sense this is the fundamental issue. But I do not in the least deny that there are universals. On the contrary, I do not see how there could be classes unless there were universals. The point at issue between us is not whether there are universals, for on that point we are agreed. The point at issue is what a universal is. I admit that I am far from clear about this point. Had I a satisfactory theory of universals, I would produce it. I certainly do not think that a universal

¹ Mr. Joseph might say that the mark does vary, *e.g.*, it may be badly printed in one place and properly printed in another. It should, however, be clear that I am in this statement using 'mark' in such a sense that *x* will be the same mark whenever the letter *x* is used. In other words, I am speaking of the mark as *type* and not as *token*, to use C. S. Peirce's expressions.

is a symbol—a view which Mr. Ayer seems to suggest.¹ Nor do I think that a *class* is a symbol. Indeed, I have explicitly rejected this view.² Mr. Joseph's view (so far as I understand it) seems to me to be even more untenable. I understand that his view is that a universal is 'something one which also somehow varies' (p. 421), i.e., that a universal is a determinable. How *something one* should *vary* I do not profess to understand. But my present concern is the difficulty of understanding what is meant by the word 'determinable'. It seems to me that 'determinable' is a very unfortunately chosen word for Mr. Joseph's purpose. Presumably he took it from W. E. Johnson, who, I believe, introduced the word into philosophy. I have great difficulty in understanding what Johnson means, but I feel fairly confident that he would not have said that, for example, *horse* is a *determinate* under some *determinable*. On the contrary, I believe he used the pair of words 'determinable' and 'determinate' in contrast to the pair of words 'genus' and 'species'. Mr. Joseph seems not to notice the difference. We can use the expression "'*x* is an animal' implies '*x* is mortal'", and certainly 'a horse' could be substituted for '*x*' here so as to make sense. I wonder whether Mr. Joseph has reached his view by considerations something like the following. If we begin with the empty form '*x* is red', we shall find that whatever could be significantly substituted for *x* in the expression '*x* is red', would be coloured. Thus, whatever could be significantly substituted for *x* in such an expression would be a determinate of a determinable. Thereupon, Mr. Joseph has concluded that it is the *determinable* which varies, and he seems to think that the determinable is a variable 'diversely exemplified'.

If this is Mr. Joseph's view, then he seems to me to be profoundly mistaken. If it is not his view, then I do not at all understand what he means by saying that a variable is a determinable. My reason for saying that Mr. Joseph's view is profoundly mistaken is that it is not the *variable* which determines the range of significance; on the contrary, it is the *function* which determines the range of significance for the variable. Mr. Joseph clearly wants to insist upon common and determinable natures because he wants to find something which collects the values into a set. Thus he says, with reference to me, 'does she really think that the elements could be correlated

¹ See his paper 'On Particulars and Universals', p. 58. *Proc. Arist. Soc.*, N.S. XXXIII.

² See *A Modern Introduction to Logic*, p. 157 (1st edition); p. 158 (2nd edition).

according to a rule if there were no variable except the symbols which do not vary'? In addition to the confusions, upon which I have already commented, this statement commits the mistake of supposing that the correlation according to a rule is determined by the nature of the variables. But a function is generated by the nature of the relation, *i.e.*, by the rule connecting the dependent with the independent variable, and not at all by the *natures* of the variables. The specific character of the function is determined by the form of the rule. As mathematics becomes increasingly general, the nature of the objects constituting possible values for the variables becomes increasingly less and less relevant. In the same way, propositional functions are widely used in logistically developed systems because these systems are concerned with relational forms, not with the nature of this or that particular, definite, object which could be used to exhibit that form.

I should like to ask Mr. Joseph (with reference to his footnote on p. 421) *what* is the common and determinable nature in the equation $y = \frac{1}{2}x$? The 'nature' here may be *real number*. But what can be the common and determinable nature exhibited (or, as Mr. Joseph would say, 'diversely exemplified') in the various numbers which are the values of the function $y = \frac{1}{2}x$? Is it *being half some other number*? In that case, incidentally, Mr. Joseph would have to admit that, for example, N can be a function of N , and the charge of circularity which he elsewhere brings against the theory of descriptions would recoil upon himself. It is certainly true that *being half some other number* is exhibited in the arguments, as in the values, of the function $y = \frac{1}{2}x$, for every x is half some other number, and also double some y . It would be true to say that *being half some other number* is a function of *being a real number*, if that means that possession of the first of these properties entails possession of the second. This, however, would be irrelevant to the distinction between function and argument, and to the distinction between dependent and independent variable.

(ii) *Theory of Descriptions*.—Mr. Joseph's criticism of this topic is bound up, as he recognises, with the discussion of the nature of a variable. Since we differ with regard to the nature of a variable we are bound to differ in our interpretation of Russell's theory of descriptions. I return, then, to the consideration of the significance of '($\exists c$)' as used in the expression " $(\exists c) \cdot 'x$ is a unicorn' is true when c is substituted for x ". In asserting the proposition expressed by this expression we do not *indicate* an object; we assert that *the class*, the elements of which are referred

to by the variable, *is not empty*. Mr. Joseph persists in supposing that Russell's view requires that an object should be *indicated*; whereas what it requires is that an object should be *specifiable*. Now, an object could not be *specifiable* unless, under certain circumstances, it could be *specified*; in those circumstances it could be *indicated*. But to say that it *could be indicated* is not to say that it *is indicated*. The force of the assertion that a unicorn exists is that it is possible to indicate an object which is in fact a unicorn. To assert that the proposition *a unicorn exists* is false is to deny this possibility. In Russell's notational expression the force of the assertion is brought out by using *c* in a way strictly analogous to the use of *a*, *b*, *c*, in the quadratic formula ' $ax^2 + bx + c = 0$ '. A given object, named *Hornboy*, for instance, is no more indicated in the one expression than a given number 4, for instance, is indicated by *a* in the latter expression. Further, Mr. Joseph has failed to see that, if it makes sense, as it certainly does, to say 'a unicorn exists', then, if you were to get hold of an object which is *this unicorn*, it would be just nonsense to say 'this unicorn exists'.

Similar remarks apply to what Mr. Joseph says in §§ 22-24. In asserting that the author of *Waverley* exists, we are asserting both that the class defined by 'someone wrote *Waverley*' is not empty and also that it contains only one member. Thus *c* in the expression ' $(\exists c) : \phi x . \equiv_x . x = c$ ', is used precisely as it is used in the expression corresponding to 'a unicorn exists'. To assert that the author of *Waverley* exists is, then, to assert that there is an object, we may not know what it is, which could be indicated, and of that object, and of this object alone, it could be truly said that that object wrote *Waverley*. It must be admitted that the expression 'The author of *Waverley* exists' is significant, even though there may be no-one who ever wrote a book *Waverley*, just as it is significant to say 'God exists'. I hardly think that Mr. Joseph intends to deny this, but if not, it is difficult to see quite what it is that he is intending to maintain. I think part of his difficulty may be due to his tendency to confuse 'uniquely describing' with 'indicating'. He seems to think that I should wish to deny that it is possible both to refer to an object by using a demonstrative symbol and also to refer to that object by using a descriptive phrase. On the contrary, I should maintain that wherever the first mode of reference is possible, there also descriptive reference is possible. But not, of course, conversely. Is this the point which Mr. Joseph cannot see?

I think that the confusions into which Mr. Joseph has fallen

are revealed in the following passage, which I accordingly quote at length :

Is 'James Ballantyne wrote "*Waverley*"' equivalent to 'James Ballantyne is Scott'? The first is false, not nonsense; whether the man called James Ballantyne or the man called Scott wrote "*Waverley*" is an historical question, to be settled by evidence. But that the man called James Ballantyne is the different man called Scott is nonsense, and no evidence is required to disprove it. And the only way to avoid this nonsense is to say that the 'values' of x are not so many different particulars, but so many different symbols for one particular (p. 431).

We are agreed that whether Ballantyne or Scott wrote *Waverley* is an historical question; as such it does not concern us. But who is responsible for the 'nonsense' that two different men are the same man? Surely Mr. Joseph. His attempt to extract this nonsense out of the expression 'There is an object c such that " x wrote *Waverley*" is always equivalent to " x is c " and c is Scott' results from *his* assumption that c (in this expression) is used as a demonstrative symbol, or as a variable standing for 'any proper name', or as so many different names for the same particular. But this, as I said before, is not the case. I can significantly, and truly, assert that the author of 'Sumer is icumen in' exists, even though I do not know who wrote that poem, and therefore I could not name or indicate the person who did in fact write it. But in saying 'The author of "Sumer is icumen in" exists' I am saying that under specifiable circumstances (which are not in fact realised) I should be able to indicate this person. It is in this way that c is used in the expression Mr. Joseph is considering. What he has failed to see is that in *every* expression involving the use of *some, all, any, a, the* the reference must be descriptive and not demonstrative—to use my own terminology. It is true that when we use *one* expression for *another* expression, what is strictly substituted is one word, or symbol, for some other word, or symbol. I emphasised this point, when writing my book, by saying, 'If for x in " \hat{x} is human" we substitute the name of an individual who is human we have a sentence expressing a true proposition. For example, the substitution of "Socrates" for x yields the true proposition *Socrates is human*. Thus the class *men* is the set of individuals whose names could be substituted for x in " \hat{x} is human", so as to give a sentence expressing a true proposition'.¹ I added, 'This set

¹ *Op. cit.*, p. 142 (2nd edition). The same statement occurs in the first edition (p. 149), except that I failed to correct the misprint of x for \hat{x} throughout. I habitually say that substitution in a propositional function *yields* a proposition, since both the propositional function and the sentence derived from it are *expressions*.

of individuals satisfies the propositional function " \hat{x} is human". I had previously explained what is meant by 'satisfying a propositional function', and it seems to me to be clear that we may assert that a propositional function can be satisfied without being acquainted with any given object which does satisfy it. It would, therefore, be absurd to suppose that c is a 'symbol for *any* proper name or demonstrative'.

It would take too much space to consider in detail all that Mr. Joseph says with regard to proper names and demonstratives. I shall deal only with certain points which seem to show that Mr. Joseph does not understand how I have used 'ordinary proper name' and 'logically proper name'.

He objects to the expression 'logically proper name' on the ground that it should be replaced by 'logical proper name' or else that we should replace 'ordinary proper name' with 'ordinarily proper name'. I cannot help thinking that Mr. Joseph is deliberately making unnecessary difficulties here. I do not myself use 'logically proper name' as a rule; I think it is an awkward expression, and for that reason I have replaced it by 'demonstrative symbol'. I suppose that the phrase 'ordinary proper name' is used as a short expression for 'a proper name in the sense in which in ordinary conversation the phrase "proper name" is commonly used'. By 'logically proper name' is meant 'a proper name used as "proper name" would be used in a logically precise symbolism'. There is no suggestion that there is 'a logical propriety about the demonstrative, which an "ordinary proper name" lacks, but an appropriateness in the latter, which a "logically proper name" lacks' (p. 433). A proper name is a name for an individual. Hence a proper name which applies to no individual would be a contradiction in terms. I need not tell Mr. Joseph how the phrase 'proper name' has come into the language, but he seems to have forgotten the significance of 'proper' in this phrase. I have distinguished between a proper name as used in ordinary conversation and a 'proper name' which is in fact an abbreviated description, expressly on the ground that the former contains a demonstrative element, whereas the latter does not.¹

Mr. Joseph confuses 'uniqueness of reference' with demonstration.² When a demonstrative symbol is used, then there must be uniqueness of reference. But there may be uniqueness of reference without the use of a demonstrative symbol. Wherever there is uniqueness of reference there is precision.

I cannot think how Mr. Joseph has come to suppose that I

¹ See *A Modern Introduction to Logic*, p. 27.

² § 28.

believe that ambiguity entitles a symbol to be called a variable.¹ It is clear from the examples he gives, viz., 'Jones is a man' and $\iota\sigma\alpha\ \acute{\alpha}\pi'\ \iota\sigma\omega\nu$, that he uses the word 'ambiguity' in the sense in which I used it when, for instance, I distinguished (in my book) between ambiguity and vagueness.² This, it seems to me, is the ordinary sense of 'ambiguous'. I took care to point out that Russell's use of the word 'ambiguity', in his account of propositional functions, was misleading,³ and I explicitly replaced his phrase 'denotes ambiguously' by 'denotes indeterminately'.⁴ If Mr. Joseph supposes that what he says in §§ 19 and 20 has any relevance to anything I have been concerned to maintain, then I can only refer him to what I have said in my book.

Mr. Joseph says that I cannot claim the authority of *Principia Mathematica* for 'the contention that c is a variable' (p. 429 n.). But the quotation he gives from the Introduction to the second edition of that work does not support him. The a in ϕa is supposed to be a constant, the point of the supposition being that what is then considered are the various assertions which may be made about one and the same individual to the effect that that individual has a certain property. The use of a here is not in the least analogous to the use of c in an expression which expresses a non-elementary proposition. The context, I think, makes this clear. In my opinion it is unfortunate that Russell should speak, as he does, of ϕa as a *proposition*; it is the form of a determinate, elementary proposition. It is unfortunate because it is likely to mislead unwary readers such as Mr. Joseph.

In my former article I commented upon Mr. Joseph's prolonged discussion of the phrase 'such that', which I had used in one formulation of the proposition *A unicorn exists*. My reason for doing so was that Mr. Joseph seemed to suppose that the words 'such that' could only be interpreted in the esoteric way in which he chose to interpret them. I pointed out that he might have saved himself the trouble of suggesting equivalents which I should not accept, had he noticed that I had given other expressions, in which 'such that' did not occur, which were exactly equivalent to the objectionable expression. Hence, no criticisms of any one of these expressions which would not bear on the others could be regarded as relevant, except as a criticism to the effect that the expression was unclear or obscure or unpleasant in style. In § 13 of his second article Mr. Joseph seems to suggest that these statements of mine are tantamount to an admission that his criticism was sound. Quite the contrary.

¹ § 20.² *Ibid.*, p. 131.³ *Op. cit.*, p. 21.⁴ *Ibid.*, p. 133 and note

(iii) *Propositions and Constituents*.—I do not hold that propositions 'are a kind of *Zwischending* distinguishable alike from statements which "express" them and from facts which may be known' (p. 434). If Mr. Joseph thinks that he can extract this view out of the view that a proposition is a logical construction, then he clearly does not understand what is meant by the phrase 'logical construction'. I admitted, and I admit again, that I am muddled about propositions. I believe that it would be possible to discuss all the topics with which we have been concerned without using the word 'proposition' at all. It could be replaced by statements about sets of facts in which some one is judging something. But to do this would involve a tedious prolixity.

Mr. Joseph misrepresents what I said with regard to the question whether *the Church in Hyde Park* is a constituent of the proposition *The Church in Hyde Park is large*. He says that I said *the Church in Hyde Park* is an incomplete symbol, and thereupon accuses me of overlooking 'the difference between symbol and symbolised' (p. 435). But I did not say this. I said: '*The Church in Hyde Park* is not a constituent of any proposition; nor is *The Cathedral on Ludgate Hill*. On the contrary, "*The Cathedral on Ludgate Hill*" is an incomplete symbol' (*loc. cit.*, p. 347). It looks as though Mr. Joseph had not understood the convention, which I invariably adopted, of using double inverted commas when I spoke of a symbol, and italics when I spoke of 'the symbolised'. My purpose in substituting "*The cathedral on Ludgate Hill*" for "*The Church in Hyde Park*" was expressly to guard against the supposition (which Mr. Joseph now seems to be making) that my reason for saying that *the Church in Hyde Park* was not a constituent of the given proposition was the falsity of the proposition. On the contrary, *The Cathedral on Ludgate Hill was built by Wren* is not false, but "*The Cathedral on Ludgate Hill*" does not refer to any constituent of the proposition in whose verbal expression this phrase occurs.¹

¹ In § 25 Mr. Joseph quotes Russell's statement—"that denoting phrases never have any meaning in themselves, but that every proposition in whose verbal expression they occur has a meaning"—and notes that my definition of 'a descriptive phrase' is not in agreement with it. I think that Russell uses the word "meaning" in a very unfortunate way, for his usage leads to misunderstanding (see *Mysticism and Logic*, p. 226). The significance of the demonstrative symbol is its denotation; apart from an object denoted there could be no demonstrative symbol. The significance of a descriptive phrase is its referend. To understand what is said we do not need to be acquainted with what a descriptive phrase may denote. I think it is more in conformity with ordinary usage to say that a descriptive phrase, or a description, has meaning, but, in that case, 'meaning' is not equivalent to denotation. I differ from Russell, therefore, only in the way in which I use "meaning".

(iv) *Implication*.—This article is already so long that I do not propose to deal at length with the questions raised by Mr. Joseph concerning material implication and formal implication (in Russell's use of the latter term). I admit that I am far from clear about the nature of implication, but I do not find that Mr. Joseph's discussion helps me to be clearer. I do not think that material implication is a relation in the same sense as *greater than*, or *similar to*, is a relation. Neither is *entails* a relation in that sense. I admit that I have not always seen that this is so. But we do commonly speak of 'relations in virtue of which inference is possible'. It is in this sense that material implication is a relation. Does Mr. Joseph wish to assert that a basis for inference is, in no sense, a relation? As I said in my former article, when the condition *whatever is implied by a true proposition is true* is satisfied, then *implies* is a basis for inference. This is all that I have wished to maintain. Mr. Joseph wants to be told what is 'the one (relation expressed by *implies*) which is by logicians intended to be expressed, not the many which could be' (p. 437). But I do not think there is *one* relation 'intended' by logicians. I may mention material implication, strict implication, incompatibility, entails.

Mr. Joseph is pleased by my 'admission' that 'This is red' entails 'This is coloured' is not a tautology. He proceeds, however, to draw an erroneous inference from what I said, for he argues that since I admit that '*This is red*' entails '*This is coloured*' is true, I must admit that '*x is red*' implies '*x is coloured*' for all values of *x*, is a formal, and therefore, a general material implication. But I should not interpret 'implies' here as equivalent to 'materially implies'; it is equivalent to 'entails'.

(v) *What is really 'analysed'?*—Much of Mr. Joseph's criticism under this heading misses the point because he has not noticed that in my brief discussion of this point (in my former article) I was considering only one kind of analysis, which is often called logical analysis, whereas Mr. Joseph quotes from a lecture in which I was considering what I termed 'metaphysical or directional analysis'. The phrases 'logical analysis' and 'metaphysical analysis' are not well chosen. I did substitute for the former 'analytic definition of symbolic expressions',¹ and for the latter 'directional analysis'.² In my discussion of Prof. Moore's example, 'Hens lay eggs', I was concerned with the latter kind of analysis, not with the former. I do not see how Mr. Joseph supposes that I wished to maintain that the various alternatives which Prof. Moore said might be offered as giving

¹ *Logical Positivism and Analysis*, p. 29.

² *Ibid.*, p. 31.

what 'Hens lay eggs' may mean¹ are offered as more logically appropriate expressions. If Mr. Joseph cannot distinguish between these two kinds of analysis, then it is waste of time for me to repeat the substance of the lecture to which he refers.² The purpose of the logical analysis of an expression, such as is used in ordinary conversations, is to show that the expression is always a logical function of simpler expressions.

I agree that 'expression' is a 'difficult' word. It is often used with harmful ambiguity and it has also systematic ambiguity. I regret the carelessness which led me to write a sentence which Mr. Joseph rightly criticises. I said "a poet was stabbed" is probably so used as to express an indefinite description'. I should have said, 'is probably used as an indefinite description'. If this slip really misled Mr. Joseph, then I apologise for it.

Mr. Joseph makes much ado about what I say concerning logically inappropriate expressions. I think he feels it is much ado about nothing. But he is fortunate if he has never been misled by inappropriate expressions and if he always sees at once what are the simpler expressions of which most ordinary expressions are logical functions. The fact (which Mr. Joseph insists upon in § 40) that Aristotle discovered how logically inappropriate our ordinary linguistic expressions are does not show that the discovery is unimportant.

The main differences between Mr. Joseph and myself concern fundamental metaphysical issues which cannot profitably be discussed here. But I should have thought that the question as to what a variable is was independent of any views concerning metaphysics. That, I have now discovered, is not the case. I should, however, like to point out that the problem of the nature of the variable as it occurs in the use of 'some' and 'any' is a problem the importance of which is not confined to logistics. In my opinion Russell's theory of descriptions is of no relevance for logistics although it is of importance in his attempted directional analysis of mathematics. I have been puzzled by the title of Mr. Joseph's articles. His discussion does not seem to me to fall within the scope of logistics, even if 'logistics' be taken to include more than the algebra of logic. I can only account for Mr. Joseph's selection of the word on the principle of giving a dog a bad name.

¹ *Logical Positivism and Analysis*, p. 8.

² Mr. Joseph's comments remind me of the remark made by the distinguished President, who presided at that lecture. He said he was glad that I had shown that philosophy was not concerned with analysis—a remark which suggested that he had not heard what was said.

III.—THE PROBLEM OF THE *LACHES*.¹

BY THEODORE DE LAGUNA.

THERE are certain curious facts about two of Plato's earlier dialogues which have often excited comment. In each of these dialogues Socrates is represented as vigorously attacking positions which we are elsewhere given every reason to suppose he himself was accustomed to maintain. In the *Laches* it is the doctrine that courage is knowledge. In the *Charmides* it is first the doctrine that temperance means that every man shall do his own work, and secondly the identification of temperance with self-knowledge. But even more remarkable is the choice of the interlocutors to whom the defence of the Socratic position is confided. In the discussion of courage it is Nicias, commander of the Athenian expedition against Syracuse. In the discussion of temperance it is Critias, leader of the thirty tyrants.

It is true that in neither dialogue are the objectionable characteristics of the interlocutor exhibited. Nicias appears as a liberal-minded gentleman, highly appreciative of the new intellectual culture of the day. There is no hint of the irresolution and vacillation that brought ruin upon the great expedition and made the name of its commander a loathing and an abomination. Plato was certainly fair to the man's better qualities, as few Athenians of his generation can have been capable of being. Much the same thing is true of the character of Critias. We see no suggestion in him of the ambitious and cruel politician of the end of the century. Like Nicias he is a gentleman deeply interested in philosophy; he has, however, a keener mind with much more vigour and originality. Plato had, of course, every personal reason to deal generously with him, on account of the close family relationship between them.

Nevertheless the choice of Nicias to defend the Socratic conception of courage, and of Critias to defend the Socratic conception of temperance, remains an astonishing thing. These men may well have been much better than popular prejudice

¹ Read before the Fullerton Club of Philadelphia.

represented them; but the most favourably disposed could hardly regard Nicias as a proper and adequate representative of fortitude, or Critias as the natural champion of moderation. It is as if Plato had wished to exhibit in the person of these two men how poor and weak the intellectualistic theory of morals is—how far the cultivation of the intelligence is from guaranteeing excellence of character.

Such an interpretation has been seriously advanced. Horneffer, a generation ago, in a learned and penetrating work, *Platon gegen Sokrates*, has shown how much can be said for it. Nevertheless it is almost impossible to accept his conclusions. That Plato used the form of the Socratic dialogue and the mouth of Socrates himself for an attack upon the most cherished and characteristic doctrines of the martyred master, cannot be the real truth of the matter.

A more just appreciation of the aim of the two dialogues is made possible when we observe that Nicias and Critias show a very defective appreciation of the doctrines which they are supposed to defend. Nicias, for example, has embraced the Socratic dictum that courage, like all other virtue, is knowledge, and he knows how to explain away some of the natural objections to it. But his conception as to what constitutes knowledge is such as neither Socrates nor Plato can have been willing to accept for an instant. His relation of discipleship to the excellent Damon sufficiently indicates this; and a precious side-light upon the matter is thrown by his total failure to understand why Socrates had refused to receive his son Niceratus as a pupil. Very revealing also is his reply to a certain indignant protest of Laches, that to identify courage with wisdom is necessarily to deny this virtue to some men whom all the world acknowledges to be brave: "That does not apply to you, at any rate, Laches, so don't be disturbed; for I mean to say that you are wise, and Lamachus too, provided you are brave, and the same for a great many other Athenians." How far this is from the spirit of Socrates's teaching needs no setting forth.

The same thing is true of Critias in the *Charmides*. He has suggestions to offer which may be valuable; but he himself does not know what to make of them. This is notably the case with his first definition of temperance: that it is each man's doing his own work. As Socrates remarks, this needs clarification; it is as if its author had propounded an enigma. He illustrates this by interpreting the definition in a purposely perverse way: if every man does his own work, the cobbler will make shoes for himself and for no one else, the weaver will make

cloth for himself alone, etc. Critias, of course, repudiates this interpretation, but merely on the ground that the term "work" has been understood in too wide a sense; such things as weaving and cobbling ought not to be included. "Work" should be used only for what is gentlemanly and honourable, and some such word as "toil" or "labour" be applied to menial occupations. He does not in the least suspect that the real perversity in Socrates's interpretation of his definition has to do with the expression "his own." In the *Republic*, as it happens, a more reasonable interpretation of the phrase is found. There Socrates is represented as holding that the fundamental principle of civic justice is that every citizen shall do his own work; but this is made to mean that each man shall do what he is best fitted to do: it is the principle of the division of labour. But this is just the opposite of the notion that the cobbler shall make shoes for nobody but himself. We see, then, what Plato's intention is in the *Charmides*. Socrates is not made to criticise and refute any genuinely Socratic doctrine, but merely to show up the superficiality of men who try to maintain the Socratic doctrine without really understanding it.

This is further illustrated by the concluding section of that dialogue, in which the identification of temperance with self-knowledge is discussed. Self-knowledge is taken to be the science which has for its object science and ignorance, and thus includes itself as part of its object. Critias cannot succeed in making it plausible that such a science exists or that if it existed it would have the slightest utility. But the conclusion that is indicated is, not that self-knowledge is an absurdity, but that on Critias's principles nothing is to be made of it. If now we look to Plato's more dogmatic writings for some suggestion as to how he wished the matter to be understood, we find, of course, that according to him, there can be no knowledge which has for its object either itself or any other cognitive act. The object of knowledge is always a form, or universal, such as is expressed by a general definition. There is a science of science, but its object is not any particular science but the form of science. That some such view is the background for the negative discussion of the *Charmides* is apparent.

What, then, can have been Plato's motive in all this? That, I think, is fairly evident. Plato regarded himself as the real inheritor and developer of Socrates's thought. Without binding himself to a slavish agreement with all that his master had taught—which would in itself have been the worst treason to his teaching—he did conceive that he was continuing the master's

great enterprise. Meanwhile, there were other followers of Socrates at work: Euclid, Antisthenes, and Aristippus, and perhaps already also the young Phaedo. Various versions of Socrates's ideas were abroad, both in the writings of these men and in the general tradition of the educated public. Socrates was held to have taught that all virtue is knowledge, that temperance is self-knowledge, and other similar tenets. Plato's contention is that while these formulæ are not in themselves erroneous, they have been misappreciated and misunderstood. Accordingly he represents Socrates himself as criticising the current representations of his doctrine as superficial and misleading.

It has been asked, why, if Plato was writing in criticism of such men as Euclid and Antisthenes, he did not introduce them by name into his dialogues. Now whatever may be thought with regard to Plato's purposes and intentions, the plain facts of the matter are very striking. The Socrates of the dialogues is never exhibited in serious discussion with any of the men who were important as philosophers in Plato's own generation. The interlocutors are either philosophers of a former day—such as Parmenides and Protagoras—or they are mere philosophical amateurs or persons wholly untrained in philosophy. Antisthenes and Aristippus never speak; Euclid and Phaedo do speak, but not as participants in the philosophical discussion. Instead we have, for example, Sophists such as Hippias and Gorgias and Thrasymachus; politicians such as Anytus and Callicles; or undistinguished young gentlemen such as Meno, Phaedrus, Glauco, and Adimantus. Theaetetus, in the dialogue bearing his name, is still only a promising young student of mathematics. The only exceptions of importance that have been claimed are Simmias and Cebes in the *Phaedo*, who in the interest of an eccentric theory of Burnet have been exalted into the rank and dignity of Pythagorean philosophers. There is practically no evidence to support this view. Simmias and Cebes in the *Phaedo* simply play the same part as Glauco and Adimantus in the *Republic*. They are intelligent young men of culture, who by their frank sincerity and independence of thought furnish the objections which Socrates needs for the dialectical development of his views. Simmias and Cebes have heard Philolaus lecture, but they show no special familiarity with Pythagorean doctrines, and on one material point have to be enlightened by Socrates. In the *Phaedrus*, Simmias is classed with Phaedrus himself as an enthusiastic collector of rhetorical exercises. There is late and very doubtful evidence that both Simmias and Cebes were

authors of Socratic dialogues ; but there is none at all to show that they were men of whom Plato felt that he had to take account as philosophers. The general statement may, then, be accepted without qualification : Plato never represents Socrates in serious discussion with any one of philosophical importance who belongs to Plato's own day.

If, now, we ask ourselves why this was the case, we can see that it could hardly have been otherwise. To represent Socrates in controversy with Aristippus and plainly confuting him would have been a little too coarse even for Greek notions of propriety—too cheap a triumph for Plato to care for. Besides, if Aristippus had been so plainly confuted by the master, how did it happen that he was of the same opinion still ? There is a certain dramatic improbability in the situation. It is much more effective to take up some well-known teaching of Aristippus and discuss it without mentioning his name—as Socrates in the *Protagoras* discusses the dictum that we should master pleasure and not let it master us. These motives would, of course, not operate if the conversation were historical or were represented as historical—like the conversations between Socrates and Aristippus in Xenophon's *Memorabilia*. In that case, Socrates's discussions with men like Euclid, Antisthenes, and Aristippus would have the highest interest and value, and there would be no reason for being silent with regard to them.

After all, whatever may have been Plato's motives, the facts are all that concern us here. He was not willing to utilise any of his fellow-Socratics as leading persons in his dramatic essays in philosophy. Bearing this in mind, and recalling that in the *Laches* and the *Charmides* certain interpretations of the Socratic teaching are criticised as superficial and unappreciative, we can hardly avoid the conclusion that these interpretations were thought worthy of criticism by Plato because they were current in his day and were supported by other prominent representatives of the Socratic tradition.

A great deal of learning and ingenuity has been expended in the endeavour to identify the particular Socratic writers who are criticised in various dialogues. This is made particularly difficult by the vagueness and scantiness of our information with regard to the teachings of these men. The scenting out of allusions to Antisthenes has been carried to ridiculous extremes : Socrates cannot so much as swear " by the dog ", but an allusion to the Cynic dog is at once recognised. There is, moreover, a very real possibility that Plato had not always a particular rival Socratic in mind, but was contending for an interpretation

of his own as against the general attitude of the group. Thus, while some very suggestive evidence has been adduced to show that the principal opponent in view in the *Charmides* is Euclid of Megara, and while a plausible case can be made out for the contention that it is Antisthenes who is especially criticised in the *Laches*, it is at least equally possible in the latter case that no particular opponent among the Socratics is referred to at all, but that we have to do with the refutation of what Plato conceives to be a common misunderstanding of the real spirit and purport of his master's teaching.

Viewed in either light, whether as a criticism of Antisthenes or of the Socratics generally, the *Laches* presents some singular points of interest. I have already referred to the singular choice of the principal interlocutor Nicias. He, like Critias in the *Charmides*, is not intended to represent the Socratic philosophy, but to misrepresent it. What is to be said of the other interlocutor Laches, the picturesque figure who gives his name to the dialogue? He is a typical bluff old soldier, honest, kindly, shrewd, ultra-conservative, with no use for politicians or other such smooth-talking individuals. He is no man's fool, but he has little capacity for abstract reflection. He insists on the practical, as opposed to all theoretical refinements, and the test of what is practical is for him the long experience of successful men. He stands for a sound tradition—for anything rather than an abstract intellectualism. In the philosophical discussion of the nature of courage, he takes a lively but somewhat childish interest; and when considerations of any depth or subtlety are raised he speedily becomes confused.

Most noteworthy is his attitude toward Socrates. It is he who first calls the latter into the conversation. There is one respect in which he is able to recognise Socrates's worth; namely, as a soldier; though even here there may be sources of strength in the philosopher which escape him. Alcibiades, in a passage of the *Symposium* which reads like a word of comment on the present dialogue, remarks that he had watched Socrates and Laches together in the dangerous retreat from Delium and that the superiority of Socrates's behaviour had been clearly manifest. But whatever depths there may be in the philosopher's courage, of which the plain soldier is ignorant, he does see in him a tried and tested comrade in arms, and he is ready to place the utmost confidence in his wisdom also. For that is Laches's simple and practical criterion of a worthy counsellor: he is glad to learn from one whose acts proclaim him to be a good man. Hence, as he says, his attitude toward Socrates—

"since that day when you and I went through the great hazard together."

Noteworthy, by contrast, is his attitude toward that distinguished general and politician, Nicias, now evidently at the height of his reputation and influence. He says no overt word of criticism of Nicias's character, but he obviously has no confidence in the man. He bristles toward him like a suspicious terrier. He has no hesitation in opposing and even ridiculing a proposal which Nicias has warmly endorsed ; and in argument with him he betrays throughout an attitude of personal hostility. It is as if he sensed, however obscurely, something deeply rotten in the man. Like Solon, he wishes, as he says, to keep on learning as he grows old—but with this proviso, that it be from worthy men. He is not willing to learn from Nicias.

Note too the difference between Laches and Nicias in their final reaction toward the discussion as a whole. Nicias's sleek self-satisfaction is unruffled. He takes his refutation calmly and pleasantly—that is what regularly happens and he was prepared for it. He has not been stirred to think for himself. "In my opinion", says he, "I spoke pretty well in this discussion of ours ; and if any point was inadequately treated I will fix it up later with Damon—whom you [Laches] think to ridicule without ever having seen him—and with other men too. And when I have made all secure I will teach you also, ungrudgingly ; for you seem to me to be very much in need of instruction." Laches replies : "You are a wise man, Nicias, we know. Nevertheless my advice to Lysimachus and Melesias in this matter of the education of the boys, is to send you and me both packing, and to hang on to Socrates—as I said in the first place."

It is evident that the character of Laches is drawn by Plato with sympathy and affection. It is a type of man for which he has a genuine regard, and whose virtues he would by no means wish to slight. Need it be pointed out that it is precisely the type that is exhibited in the *Republic* as characterising the class of the auxiliaries, or warriors, of the ideal state ? Laches is the brave and faithful watchdog. And his attitude toward Socrates is precisely that which Plato requires that the auxiliaries shall maintain toward the true guardians, the philosopher kings. Laches himself is no philosopher, and it would be foolish to expect him to be one. But just as foolish would it be to despise his real merits, or to regard him as of less value than a man like Nicias who has learned some lessons in the latest results of philosophy ; and, if we are to believe Plato, it is not being true to the spirit of Socrates's teachings to be guilty of so false an estimate.

The whole little drama of the *Laches*, and especially the character of Laches himself, is thus a protest against abstract intellectualism. Let us turn to the argument. The problem is the nature of courage, and the first two definitions are offered by Laches. The first, to be sure, is not properly a definition of courage, but a description of the conduct of the brave Greek hoplite. When Socrates has explained to him the requirements of a sound general definition, he offers as his second attempt that courage is a sort of endurance of the soul. At Socrates's suggestion this is amended so as to be a prudent endurance. Now it is to be noted that this definition is not really refuted by Socrates. He brings up what seems on the surface to be a strong objection to it, and one which Laches is wholly unable to dispose of; but it is one with which any reader of Plato's *Apology of Socrates* ought to have no difficulty. Socrates has been used to arguing that any man is brave in matters of which he has knowledge; as the man who knows how to ride is the brave rider and the man who knows how to dive is the brave diver. And this is true enough so far as it goes. But now he turns the argument about. Suppose that the man who is not skilled in riding or diving is called upon to do it, and suppose that in spite of his lack of knowledge he nevertheless endures the trial; is he not far braver than the expert for whom there is little or no danger! Or take two soldiers in two opposing armies: the one confident of victory because he knows that all the advantages of number and position are on his side; the other equally conscious of inferiority. Suppose the latter nevertheless endures to the end; does he give more or less evidence of courage than the man who is supported by the assurance of superior force? To this there can be but one reply; and yet it is hard to say that his endurance shows the greater prudence. Yet that is, of course, exactly what Socrates would maintain: that fidelity to duty in spite of every pain and danger is the highest prudence. When, therefore, Laches defines courage as a certain endurance of the soul he makes a real contribution to the argument, although it is one that he himself is unable to clarify or defend.

With respect to Nicias's suggestion, that courage is a kind of wisdom, which consists in knowing what is to be feared and what not, it is to be observed that he does not ascribe the definition as such to Socrates, but declares that it is in line with a familiar saying of his, to the effect that men are good in things in which they are wise and bad in things in which they are ignorant—a saying to which Socrates promptly expresses his firm adherence. The suggestion is that the definition itself is

the work of the excellent musician and sophist Damon, rather than of Socrates.

It is important to note exactly where Socrates's criticism of the definition attaches. In the first place, it is a criticism of the form. The definition is not really so narrow as it seems. The knowledge of things that are, or are not, to be feared is simply the knowledge of good and evil. In the second place, the criticism points out that the definition, as thus clarified, is inconsistent with the assumption, made by Nicias, that courage is only a part of virtue, to be distinguished from such other parts as temperance and justice. A man who had the knowledge of good and evil would as Nicias and Socrates agree, be possessed of all virtue and not merely of a part.

What conclusion, then, is indicated by the dialogue? In the first place, for one who is possessed of wisdom, courage is not a separable part of his virtue. Such virtue is unitary: it is courage, temperance, and justice at once. But the courage of Laches, worthy as it is, is obviously not of this sort. How is room to be found for it? Only in the way explicitly pointed out in the *Meno*; i.e., by recognising that "wise" and "ignorant" are not contradictory terms, but have a middle ground between them; namely, that of "right opinion." Every man is good in those things in which he is wise, and bad in those things in which he is ignorant; but what of those things with respect to which he is neither wise nor ignorant, but well trained in a sound tradition? That is Laches's case as a soldier; and he is a worthy man. It is traditional virtue, not rational virtue, that is distinguishable into parts; and Nicias's *impasse* is occasioned by the fact that he has not distinguished between these two orders, or levels, of virtue. It would, indeed, never occur to him to make the distinction, for the simple reason that he has such an imperfect conception of what knowledge is and implies. To Socrates, who realises the distinguishing characteristics of knowledge as over against even right opinion, the simple identification of virtue and wisdom is impossible.

It is clear that this doctrine is widely taught or assumed in the Platonic dialogues, and notably so in the two works which are most closely associated with the *Laches*; namely, the *Charmides* and the *Lysis*. Charmides in the former is a conspicuously temperate young man; but his definitions of temperance—that it is quietness and that it is modesty—while they are by no means devoid of truth, are sufficient to show that he is very far from the knowledge of good and evil. A good natural inheritance has been well cultivated, a fortunate disposition has been happily

trained—that is much, but that is all. But there is no suggestion that Charmides has not the temperance with which he is credited. Even so the boys, Lysis and Menexenus, are indubitably good friends, though they have very little notion in what friendship consists, and though, for one who understood this, a far higher form of friendship would be possible.

But for the fullest expression of this idea of grades, or levels, of virtue we must look to the *Republic* with its *three* distinct classes of citizens; for in the scheme of that work we find beneath the men like our friend Laches a stratum where honourable courage is as impossible as wisdom, and where only a kind of negative virtue can subsist, imposed by force upon the commonalty by their sagacious rulers, acting through the well-trained soldiery. This lowest stratum, however, need not concern us here. Let us briefly recall how Laches is treated in the ideal republic.

In the first place there is no pretence of giving him any real intellectual enlightenment. A carefully expurgated course of religious and patriotic verse; a corresponding course in singing and the lyre; a hard and practical system of physical exercises, fit to make soldiers and not record-breaking athletes—such is the training that he receives. The object of this training is to make him the willing and efficient tool of his masters, and at the same time to give him the most satisfactory life that is open to such a man and that is consistent with his highest social usefulness. Disciplined courage, endurance, fidelity, are what is expected of him; and these are virtues the significance of which lies outside Laches himself in the tradition which he inherits, and ultimately in the foresight of the body of rulers who have shaped and controlled the tradition. His instincts and impulses need a wise direction by an external intelligence. He and his kind are bred like blooded cattle; and so far is it from being necessary to win his rational assent, that a scheme of cleverly manipulated lots is appropriately used to hoodwink him into subserviency. The warrior is a man who has no claim to the truth, except where the falsehood would impair his courage or discipline. It is sound statecraft to lie to him for the general good.

Such is the treatment which Laches openly receives in the *Republic*, and which is foreshadowed in the little dialogue which bears his name. In the *Laches*, if my analysis has been correct, the conception of levels of virtue is suggested as being the genuinely Socratic view, in opposition to another conception, current among the followers of Socrates, which identified all virtue with wisdom. Was Plato right in this, or was Antisthenes? That is another question, the treatment of which would carry us far

beyond the possible limits of this paper; and it may be that with the fullest knowledge of the Cynic philosophy, or even with a direct knowledge of the discourses of Socrates himself, we should be unable to frame a decisive answer. In the teachings of any man who thinks hard and independently, there is a certain internal instability; and two such followers as Antisthenes and Plato would inevitably develop opposed implications of the teachings. Neither of the two was Socrates; both owed to him their fundamental ideas; both remained true to him; and both went beyond him, but in divergent directions. Each to the other must have seemed a degenerate. It is not hard to imagine the loathing which the Cynic must have felt for the intellectual aristocrat, who, in the name of their common master, proclaimed a doctrine of levels of virtue.

Antisthenes is lost to us. Plato is practically the only extant representative of the Socratic movement. May we note in conclusion that in Plato himself there is a certain instability, not to say inconsistency, in this very matter? What is the grand climax to which, in the *Apology* that he has put in the old man's mouth, the whole defence of the philosophical life leads up? Not that it is a divinely inspired life, to which a few are called by special election; but that it is a life to which all men are called: "A life without investigation is not fit to be lived by a human being." That is Socratic if anything is; and it is idle to try to make it lie down in peace with the treatment of the artisan and the soldier in the *Republic* of Plato.

IV.—INDEPENDENT POSTULATES RELATED TO C. I. LEWIS'S THEORY OF STRICT IMPLICATION.¹

BY EDWARD V. HUNTINGTON.

INTRODUCTION.

A CHARACTERISTIC feature of Lewis's system of "strict implication" is that in this system propositions are classified not only as "true or false" but also as "possible" or "impossible".² In this system, therefore, four classes of propositions are distinguished :

- (A) those that are necessarily true ;
- (B) those that are true, but not necessarily true ;
- (C) those that are false, but not necessarily false ;
- (D) those that are necessarily false.

Classes (A) and (B) form a class (here denoted by P) comprising the "true" propositions, and classes (C) and (D) form a class (here denoted by Q) comprising the "false" propositions. Classes (A), (B), and (C) together form the class of "possible" propositions (indicated in Lewis's work by a diamond-shaped symbol, which will here be represented by the letter L, the first letter of Lewis's name). Hence the class (D) forms the class of "impossible" propositions (indicated in Lewis's work by the diamond preceded by a "curl").

Besides these two ideas of "true" and "possible", the other primitive ideas assumed in Lewis's theory are the following (p. 123) :

¹ To be presented to the American Mathematical Society, March, 1934.

² The theory of "strict implication" was first developed by C. I. Lewis in 1918, in his *Survey of Symbolic Logic* (University of California Press, Berkeley, and now out of print). A revised treatment is given in a new book, *Symbolic Logic*, by C. I. Lewis and C. H. Langford (The Century Co., 1932). It is to this later book that references will here be made.—For valuable suggestions in the preparation of this paper, I am indebted to Dr. W. V. Quine.

- (3) the logical product of p and q (denoted by pq);
- (4) the contradictory of p (denoted by $\text{curl } p$, which is here represented by p'); and
- (5) the relation of logical equivalence, $=$. The symbol " $=$ " is understood to have the usual properties of the equality sign; in particular, if $p = q$, then p may be replaced by q in any formula of the system (p. 125).

The "primitive propositions" which Lewis assumes are nine, or more properly eleven, in number. [The first seven (11-1-11-7) are found on page 125, the eighth (19-01) on page 166, the ninth (20-01) on page 179. The other two (corresponding to our postulates 1 and 2 below) are not explicitly stated, but are implicitly contained in paragraphs 1 and 2 on page 123. The first nine postulates are re-numbered B1-B9 on page 493.]

Since these primitive propositions are stated partly in symbolic and partly in verbal form, this dual form of statement occasionally gives rise to a possible ambiguity of interpretation. In all such cases, the verbal formulation is the one with which we are here concerned.

The purpose of the present paper is to construct an abstract mathematical system of which Lewis's system (as verbally formulated) may be regarded as an instance.

The postulates here presented are much simpler than Lewis's (when the latter are expressed explicitly in terms of the primitive ideas), and are shown to be entirely free from redundancies. It is hoped that this mathematical analysis will not only throw new light on the logical structure of this particular system, but also bring more clearly into view some essential points of divergence between certain general methods employed in ordinary mathematics and certain procedures characteristic of the so-called logistic method (for example, in *Principia Mathematica*).

THE PRIMITIVE IDEAS.

As the "base" of our abstract mathematical theory we take the class of systems $(K, Q, D, \times, ', =)$, where

K = a class of undefined elements a, b, c, \dots (interpretable as "propositions");

Q = an undefined subclass in K (interpretable as the class of propositions which are "false");

D = an undefined subclass in Q (interpretable as the class of propositions which are "necessarily false");

$a \times b = ab$ = the result of an undefined binary operation on a and b (interpretable as the proposition " a and b ");

a' = the result of an undefined unary operation on a (interpretable as the proposition which is the "contradictory" of a);

$(a = b)$ means that a and b are equal in some undefined respect, and are interchangeable in any formula within the theory.

In terms of these undefined concepts ($K, Q, D, \times, ', =$) certain derived concepts will be defined; in particular: a subclass P (interpretable as the class of propositions which are "true"); a subclass A (interpretable as the class of propositions which are "necessarily true"); two subclasses B and C (intermediate between A and D); a subclass L (interpretable as the class of propositions which are "possible"); a class K' whose elements are certain *statements about* elements of K ; and a relation $a < b$ (interpretable as " a strictly implies b ").

THE POSTULATES 1-12, AND 13.

On this base ($K, Q, D, \times, ', =$) we now impose the following postulates.

(A preliminary Postulate 0, demanding that the subclass D shall be non-empty, serves to exclude obviously trivial cases and will be assumed without further mention. The arrow notation, $x \rightarrow y$, is merely an abbreviation for the words "if x , then y ", or simply " x leads to y ". The dot in such expressions as a in $K . b$ in D is merely an abbreviation for the word "and".)

POSTULATE 1. a in $K . b$ in $K . \rightarrow . ab$ in K .

POSTULATE 2. a in $K . \rightarrow . a'$ in K .

(These two postulates merely ensure that the class K is a "closed set" with respect to the operations \times and $'$.) In the following three postulates, it is understood that the letters a, b, c and their combinations are elements of K .

POSTULATE 3. $ab = ba$.

POSTULATE 4. $(ab)c = a(bc)$.

POSTULATE 5. $(a'b')'(a'b)' = a$.

[If we introduce the usual definition of $a + b$, namely:

Definition. $a + b = (a'b')'$, then Postulate 5 may be replaced by

POSTULATE 5a. $ab + ab' = a$.]

These five postulates 1-5 serve to make the system ($K, \times, ', =$) a Boolean algebra.¹

¹ See *Trans. Amer. Math. Soc.*, vol. 35 (1933), pp. 274-304, with corrections on p. 557 and p. 971; or *MIND*, vol. 42 (1933), pp. 203-207.

POSTULATE 6. $a \text{ in } Q \rightarrow a \text{ in } K$.

POSTULATE 7. $a \text{ in } D \rightarrow a \text{ in } Q$.

(These two postulates merely ensure that Q is a subclass in K , and D a subclass in Q .)

POSTULATE 8. $a \text{ in } D . b \text{ in } K \rightarrow ab \text{ in } D$.

That is, if a is in D , then the product of a and any other element of K will also be in D .

Definition P. $(a \text{ in } P) = (a \text{ in } K . a \text{ not in } Q)$.

That is, the subclass P is by definition the class comprising all the elements of K which are not in Q .

POSTULATE 9. $a \text{ in } P . b \text{ in } P \rightarrow ab \text{ in } P$.

POSTULATE 10. $a \text{ in } K . a' \text{ in } Q \rightarrow a \text{ in } P$.

Definition A. $(a \text{ in } A) = (a' \text{ in } D)$.

That is, the subclass A is by definition the class containing every element a for which a' is in D .

POSTULATE 11. $a \text{ in } A . b \text{ in } A \rightarrow ab \text{ in } A$.

POSTULATE 12. $\exists b : (b \text{ in } K . b \text{ not in } D . b \text{ not in } A)$.

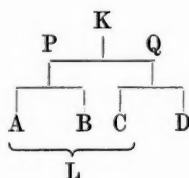
This last postulate merely ensures the existence of elements in K outside the classes A and D . These intermediate elements are classified into class B and class C as follows:

Definition B. $(a \text{ in } B) = (a \text{ in } P . a \text{ not in } A)$.

Definition C. $(a \text{ in } C) = (a \text{ in } Q . a \text{ not in } D)$.

The subclass L is defined as follows:

Definition L. $(a \text{ in } L) = (a \text{ in } K . a \text{ not in } D)$.



Any system $(K, Q, D, \times, ', =)$ which satisfies these twelve postulates may be called a "Lewis (verbal) system of strict implication"; or, if preferred, the following supplementary postulate may be added to the list:

POSTULATE 13. $a \text{ in } D . b \text{ in } D \rightarrow a = b$.

That is, the subclass D is to contain essentially only one element.

CONSISTENCY OF THE POSTULATES. ILLUSTRATIVE EXAMPLES.

The consistency of Postulates 1-13 is established by the existence of any system $(K, Q, D, \times, ', =)$ which satisfies all the postulates. Finite examples of such systems, containing only

four or eight elements, are given in a later section. More interesting examples may be constructed as follows.

Consider all the undergraduates in a college, each student coming from one of the forty-eight states (New York, California, etc.), and belonging to one of the four college classes (freshman, sophomore, junior, senior). Let the class K be the class of "verdicts" comprising all the statements of the form "Smith is from New York", "Smith is not from New York", "Smith is a freshman", "Smith is not a freshman", etc., and also all combinations of such statements by means of the connectives "and" and "or". Also, let the verdict contradictory to a be denoted by a' .

For example, if the statement a = "Smith is a freshman and Jones is from New York, or Smith is a freshman and Jones is not from New York", then a is a verdict. Also, if the statement b = "Smith is a freshman", then b is a verdict. Moreover, these two verdicts are clearly equivalent statements, as far as the college catalogue is concerned, and we write $a = b$. The verdict contradictory to a is a' = "Smith is not a freshman or Jones is not from New York, and Smith is not a freshman or Jones is from New York".

Now each verdict will be as a matter of fact either true or false (for example, the college catalogue may contain errors). Among the true verdicts there are some that are necessarily true, like "Smith is a freshman or Smith is not a freshman"; and among the false verdicts there are some that are necessarily false, like "Smith is from New York and Smith is from California".

Out of this material of "verdicts" we now construct the following examples of systems ($K, Q, D, \times, ', =$):—

Example QF. Let K = the class of "verdicts", Q = the class of false verdicts, D = the class of necessarily false verdicts, $a \times b$ = " a and b ", and a' = the contradictory of a .

This example satisfies all the Postulates 1-13, as is readily verified. The subclass P will comprise the true verdicts and the subclass A those that are necessarily true, while the subclass L will comprise all the verdicts that are not necessarily false. This example QF gives perhaps the most convenient concrete interpretation of the abstract symbols ($K, Q, D, \times, ', =$). But another equally valid interpretation is the following:—

Example QT. Let K = the class of "verdicts", Q = the class of true verdicts, D = the class of necessarily true verdicts, $a \times b$ = " a or b ", and a' = the contradictory of a .

This example also satisfies all the Postulates 1-13.

There is nothing in the mathematical postulates themselves which distinguishes between the "false-and" interpretation of Q and \times , and the "true-or" interpretation of Q and \times .

In deducing theorems from the postulates it is of course essential to work wholly in the abstract—using only those properties of the symbols ($K, Q, D, \times, ', =$) which are explicitly mentioned in the postulates. Any system ($K, Q, D, \times, ', =$) which has all the properties mentioned in the postulates will then be sure to have also all the properties mentioned in the theorems.

THEOREMS DEDUCED FROM POSTULATES 1-12.

The following familiar properties of Boolean algebra (21-26) are deducible from Postulates 1-5 alone (*loc. cit.*):—

$$20. aa = a. \quad 21. (a')' = a. \quad 22. aa' = bb'.$$

Definition z. The unique element $z = aa'$ is called the "zero element" of the system. An important property of z is that z is in the subclass D , as shown in 27, below.

Definition u. The unique element $u = z' = a + a'$ is called the "universe element" of the system. The element u is in the subclass A , as shown in 28, below.

$$23. az = z, \text{ and } a + z = a. \quad 24. au = a, \text{ and } a + u = u. \\ 25. a(b + c) = ab + ac. \quad 26. a + bc = (a + b)(a + c).$$

Hence by Postulates 6, 7, 8 and Definition A we have :

$$27. a \text{ in } K. \rightarrow . aa' \text{ in } D.$$

For, there is at least one element b in D . Hence, by 7, 6, 2, this element b is in K , and b' is in K . Hence by 8, bb' is in D . Hence by 22, aa' is in D .

$$28. a \text{ in } K. \rightarrow . a + a' \text{ in } A. \quad (\text{By 27, 21, and Def. A.})$$

The following theorems concern the subclasses Q and P :—

30. *The class K is the "simple sum" of the subclasses Q and P.*
By this we mean a four-fold statement, (a), (b), (c), (d) :

- (a) $a \text{ in } Q. \rightarrow . a \text{ in } K$;
- (b) $a \text{ in } P. \rightarrow . a \text{ in } K$;
- (c) $a \text{ in } Q. \rightarrow . a \text{ not in } P$;
- (c') $a \text{ in } P. \rightarrow . a \text{ not in } Q$;
- (d) $a \text{ in } K. a \text{ not in } P. \rightarrow . a \text{ in } Q$;
- (d') $a \text{ in } K. a \text{ not in } Q. \rightarrow . a \text{ in } P$.

For, (a) follows from Postulate 6 ; (b) follows from the definition of P ; (c) follows from the definition of P (since if a were

in P , then by Def. P , we should have a not in Q , contrary to hypothesis; (c') follows from (c) (and conversely); (d) follows from the definition of P (since if a were not in Q , then by Def. P , we should have a in P , contrary to hypothesis); (d') follows from (d) (and conversely).

In other words, we have a simple dichotomy of the main class K into the two non-overlapping subclasses Q and P .

31. $a \text{ in } P \rightarrow . a' \text{ in } Q$.

For, suppose a' not in Q . Then by 30, a' in P , whence by 9, aa' in P . But by 25, aa' in D , whence by 7, aa' in Q , whence by 30, aa' not in P . Hence the supposition is impossible. Hence a' is in Q .

32. $a' \text{ in } P \rightarrow . a \text{ in } Q$. (By 31 and 21.)

33. $a \text{ in } Q \rightarrow . a' \text{ in } P$. (By 10 and 21.)

34. $a' \text{ in } Q \rightarrow . a \text{ in } P$. (By 10.)

35. $a \text{ in } K . b \text{ in } Q \rightarrow . ab \text{ in } Q$.

Proof. Suppose ab not in Q . Then by 30, ab in P . But by 33, b' in P . Hence by 9, b' (ab) in P , whence by 3 and 4, $(bb')a$ in P , whence by 22 and 23, z in P . But by 27, z in D , whence by 7 and 30, z not in P . Hence the supposition is false. Hence ab in Q .

The following theorems concern the subclasses A , B , C , and D :—

40. The class Q is the "simple sum" of the subclasses C and D . That is,

(a) $a \text{ in } C \rightarrow . a \text{ in } Q$. [By Def. C .]

(b) $a \text{ in } D \rightarrow . a \text{ in } Q$. [By 7.]

(c) $a \text{ in } C \rightarrow . a \text{ not in } D$.

(c') $a \text{ in } D \rightarrow . a \text{ not in } C$.

(d) $a \text{ in } Q . a \text{ not in } D \rightarrow . a \text{ in } C$.

(d') $a \text{ in } Q . a \text{ not in } C \rightarrow . a \text{ in } D$.

41. $a \text{ in } A \rightarrow . a \text{ in } P$.

For by Def. A , a' in D , whence by 40, a' in Q , whence by 10, a in P .

42. The class P is the "simple sum" of the subclasses A and B . That is,

(a) $a \text{ in } A \rightarrow . a \text{ in } P$. [By 41.]

(b) $a \text{ in } B \rightarrow . a \text{ in } P$. [By Def. B .]

(c) $a \text{ in } A \rightarrow . a \text{ not in } B$.

(c') $a \text{ in } B \rightarrow . a \text{ not in } A$.

(d) $a \text{ in } P . a \text{ not in } B \rightarrow . a \text{ in } A$.

(d') $a \text{ in } P . a \text{ not in } A \rightarrow . a \text{ in } B$.

43. $a \text{ in } B \rightarrow . a' \text{ in } C$.

Proof. By Def. B, a in P, whence by 31, a' in Q. Suppose a' not in C. Then by 40, a' in D, whence by Def. A, a in A, whence by 42, a not in B, contrary to hypothesis. Hence a' in C.

44. $a' \text{ in } B \rightarrow . a \text{ in } C$. [By 43 and 21.]

45. $a \text{ in } C \rightarrow . a' \text{ in } B$.

Proof. By Def. C, a in Q, whence by 21, a'' in Q, whence by 10, a' in P. Suppose a' not in B. Then by 42, a' in A, whence by Def. A, a'' in D, whence by 21, a in D, whence by 40, a not in C, contrary to hypothesis. Hence a' in B.

46. $a' \text{ in } C \rightarrow . a \text{ in } B$. [By 45 and 21.]

The foregoing theorems complete the classification of the class K into the four subclasses A, B, C, D. (Compare pp. 188-189 in Lewis and Langford.)

47. $a \text{ in } A . b \text{ in } C \rightarrow . ab \text{ in } C$.

Proof. By Def. A, a' in D, whence by 8, $a'b'$ in D. By 40, b in Q, whence by 35, ab in Q. Hence by 40, either ab in C or else ab in D. Suppose ab in D. Then by Def. A, $(ab)'$ in A, whence by 11, $a(ab)'$ in A. But by definition of $a + b$, with 25 and 23, $a(ab)' = a(a' + b') = aa' + ab' = ab'$. Hence ab' in A, whence by Def. A, $(ab')'$ in D, whence by 8, $(ab')'(a'b')'$ in D.

But $(ab')'(a'b')' = [ab' + a'b']' = [(a + a')b']' = b'' = b$ (by 24 and 21). Hence b in D, contrary to hypothesis, by 40. Hence the supposition is false. Hence ab in C.

48. $a \text{ in } A . b \text{ in } B \rightarrow . ab \text{ in } B$.

Proof. By 43, b' in C. By 47, ab' in C. By 42, a in P and b in P. Hence by 9, ab in P. Hence by 42, either ab in A or else ab in B. Suppose ab in A. Then by 47, $(ab)(ab')$ in C. But $(ab)(ab') = (aa)(bb') = z$. Hence z in C, contrary to 27. Hence the supposition is false. Hence ab in B.

49. $a \text{ in } B . b \text{ in } B \rightarrow . ab \text{ in } B$.

Proof. By definition of B, a in P and b in P, whence by 9, ab in P. Hence by 42, ab in A or else ab in B. But if ab in A, then by 48, $[(ab)a]$ in B, whence by 4, 3, 20, ab in B.

Corollary. $a \text{ in } C . b \text{ in } C \rightarrow . a + b \text{ in } C$.

The following theorems will be important in connection with the definition of Lewis's relation of "strict implication" in the next section:—

50. $a \text{ in } K . b \text{ in } K . \rightarrow . (ab)a' \text{ in } D.$

Proof. By 3, 4, 23, $(ab)a' = (aa')b = zb = z = aa'$, whence by 27, $(ab)a' \text{ in } D.$

51. $a \text{ in } P . ab' \text{ in } D . \rightarrow . b \text{ in } P.$

Proof. By 7, ab' in Q , whence by 30, ab' not in P . Suppose b not in P . Then by 30, b in Q , whence by 33, b' in P , whence by 9, ab' in P . Hence the supposition is impossible. Hence b in P .

52. $a \text{ in } A . ab' \text{ in } D . \rightarrow . b \text{ in } A.$

Proof. By 42, a in P . Hence by 51, b in P , whence by 42, either b in A or else b in B . Suppose b in B . Then by 43, b' in C , whence by 47, ab' in C , contrary to hypothesis, by 40. Hence b in A .

53. $ab \text{ in } L . \rightarrow . a \text{ in } L.$

Proof. Suppose a not in L . Then by definition, a in D , whence by 8, ab in D , whence by definition, ab not in L , contrary to hypothesis.

54. $ab \text{ in } A . \rightarrow . a \text{ in } A.$

Proof. If a in B , then by 48, $(ab)a$ in B . If a in C , then by 47, $(ab)a$ in C . If a in D , then by 8, $(ab)a$ in D . But by 4, 3, 20, $(ab)a = ab$. Hence if a is not in A , then ab is not in A , contrary to hypothesis. Hence a in A .

55. $ab \text{ in } D . ab' \text{ in } D . \rightarrow . a \text{ in } D.$

Proof. By Def. A, $(ab)'$ in A , and $(ab')'$ in A . Hence by 11, $(ab')'(ab)'$ in A , whence by 5 and 21, a' in A , whence by Def. A, a in D .

56. $ab' \text{ in } D . bc' \text{ in } D . \rightarrow . ac' \text{ in } D.$

Proof. By 8, 3, 4, ab' in $D . \rightarrow . (ab')c'$ in $D . \rightarrow . (ac')b'$ in D , and by 8, 3, 4, bc' in $D . \rightarrow . (bc')a$ in $D . \rightarrow . (ac')b$ in D . Hence by 55, ac' in D .

57. $ab' \text{ in } D . b \text{ in } D . \rightarrow . a \text{ in } D.$

Proof. By 8 and 3, b in $D . \rightarrow . ab$ in D . Hence by 55, a in D .

DEFINITIONS OF K' , $<$, AND $<<$.

Before defining the relation which is to correspond to Lewis's "strict implication", it will be convenient to introduce the letter K' to denote the class of all statements of the form " a in Q ", " a not in Q ", " a in D ", " a not in D ", etc., where a is an element

of the class K , together with all combinations of such statements by means of the connectives "and" and "or".

It will be observed that an element of K' , being a statement, cannot be said to be an element of K , without departing from the abstract mathematical treatment to the extent of interpreting K concretely as the class of propositions. In particular an element of K' cannot be assigned to any of the subclasses P , Q , A , B , C , D .

When p and q are elements of K' , we shall use the notation pq to denote " p and q ", and the notation p' to denote the "contradictory" of p ; and Postulates 1, 2, 3, 4, 5 will clearly hold within K' as well as within K . Also, if p and q are elements of K' , it may happen that pq is an "impossible statement". In this case we shall write:

$pq \rightarrow 0$ (read: pq leads to absurdity).

For example, if $p = "a \text{ in } C"$, and $q = "a \text{ not in } C"$, then clearly $pq \rightarrow 0$.

It should be especially noted that when p and q are elements of K' , the notation " $pq \rightarrow 0$ " cannot be replaced by " $pq \text{ in } D$ ", since when p and q are elements of K' , pq is not an element of K and hence the question whether pq belongs to the subclass D does not arise.

Following Lewis, the relation of strict implication may now be defined in a general way as follows:—

60. (x strictly implies y) = (xy' is impossible), where x and y may be either elements of K or elements of K' . For mathematical accuracy, however, it is desirable to treat these two cases separately, as follows:

61. Definition $<$. When a and b are in K , then $(a < b) = .(ab' \text{ in } D)$;

62. Definition $<<$. When p and q are in K' , then $(p << q) = .(pq' \rightarrow 0)$; where either symbol, $<$ or $<<$, may be read: "strictly implies".

The following theorems are immediate consequences of these definitions:—

63. When a and b are elements of K : $(a = b) \rightarrow .(a < b)$.

Proof. Since $a = b$, we have $ab' = aa'$, whence by 27, ab' in D . Hence by 61, $a < b$.

64. When p and q are elements of K' : $(p \rightarrow q) \rightarrow .(pq' \rightarrow 0)$.

This statement is to be regarded as a consequence of the linguistic meaning here attached to the words "if . . . then".

It will be observed that the converse of 64 [namely 64a: When p and q are elements of K' , $(pq' \rightarrow 0) \rightarrow (p \rightarrow q)$] is not assumed at any point in this paper.

65. When p and q are elements of K' : $(p \rightarrow q) \rightarrow (p << q)$.
(By 64 and 62.)

FURTHER THEOREMS DEDUCED FROM POSTULATES 1-12.

In the following theorems, M1-M9, it is understood that a, b, c are elements of K . (The letter M is intended to suggest that these are mathematical, as distinguished from logistic, theorems—all of them being mathematically deduced from Postulates 1-12.)

M1. $ab < ba$. [By 3 and 63.]

M2. $ab < a$. [By 50 and 61.]

M3. $a < aa$. [By 20 and 63.]

M4. $(ab)c < a(bc)$. [By 4 and 63.]

M5. $a < a''$. [By 21 and 63.]

M6. $a < b . b < c : << : a < c$.

Proof. By 56, ab' in $D . bc'$ in $D : \rightarrow : ac'$ in D . Here each of the expressions (ab' in $D . bc'$ in D) and (ac' in D) is an element of K' . Hence by 65; ab' in $D . bc'$ in $D : << : ac'$ in D . Hence by 61, $a < b . b < c : << : a < c$.

M7. a in $P . a < b : << : b$ in P .

Proof. By 51, a in $P . ab'$ in $D : \rightarrow : b$ in P . Here each of the expressions (a in $P . ab'$ in D) and (b in P) is an element of K' . Hence by 65, a in $P . ab'$ in $D : << : b$ in P . Hence by 61, a in $P . a < b : << : b$ in P .

M8. ab in $L . << . a$ in L . [By 53 and 65.]

M9. $\mathfrak{A}(a, b) : [a \text{ in } K . b \text{ in } K . (a < b)' . (a < b')']$.

Proof. By 12 and the definition of A , $\mathfrak{A}b : [b \text{ in } K . b \text{ not in } D . b' \text{ not in } D]$. By 24, $\mathfrak{A}u : [u \text{ in } K . ub' = b' . ub = b]$. Hence, taking $a = u$, $\mathfrak{A}(a, b) : [a \text{ in } K . b \text{ in } K . ab' \text{ not in } D . ab \text{ not in } D]$. But by definition of $<$ for elements of K , and definition of $'$ for elements of K' , and using 21, we have $(ab' \text{ not in } D) . (ab \text{ not in } D) : = : (ab' \text{ in } D)' . (ab'' \text{ in } D)' : = : (a < b)'$. $(a < b)'$. Hence the theorem.

CORRESPONDENCE WITH LEWIS'S POSTULATES.

These last nine theorems, M1-M9, correspond precisely to Lewis's nine postulates B1-B9, at least in their verbal formulation.

The details of the "translation" are as follows: If we replace

our symbol $<$ by Lewis's sign for implication, and our symbol $'$ by Lewis's "curl", and our letters a, b, c by Lewis's p, q, r (all of which is merely a matter of notation), theorems M1-M5 become identical with B1-B5, and theorem M9 with B9.

Further, if we ignore the distinction between $<<$ and $<$ (as is done by Lewis in accordance with the characteristic procedure of the logistic method), theorem M6 becomes identical with B6; and if also we replace our " a is in L " by " a is possible", and read Lewis's "diamond p " as " p is possible" (in accordance with the phraseology under 4 on page 123 or under 19-14 on page 167), then theorem M8 becomes identical with B8. Finally, if we replace our " a is in P " by " a is true", theorem M7 becomes identical with the verbal form of B7 as given under 11-7 on page 125.¹

Hence all of Lewis's primitive propositions (as verbally formulated) are deducible from our Postulates 1-12.

Conversely, each of our Postulates 1-12 is readily recognisable as a valid theorem in Lewis's system. (For example, Postulate 5a is 18-92 on p. 166.)

Thus Lewis's (verbal) theory may be regarded as an "instance" of our abstract mathematical theory, if the indicated concrete interpretations are given to the abstract variables ($K, Q, D, \times, '.$).

It must be clearly understood, however, that the mathematical system here presented corresponds only to the "verbal", not the "symbolic", aspect of Lewis's theory. The "verbal" theory treats "diamond a " as a statement about an element of K , whereas the "symbolic" theory treats the diamond as a unary operator whose result, diamond a , is itself an element of K . Thus Lewis's "symbolic" theory contains certain theorems (namely those which involve implicitly or explicitly the double use of the "diamond" as an operator) which cannot be expressed in terms of the mathematical theory as here presented, since all such theorems depend on the here inadmissible assumption that elements of K' are elements of K .

It is hoped that the present paper may serve to encourage a detailed comparative study of the "verbal" and "symbolic" aspects of Lewis's theory.

¹ The verbal form of B7 is " $[(p$ is true) and $(p$ implies $q)]$ implies $(q$ is true)". The formal symbolic statement, however, is " $[(p)$ and $(p$ implies $q)]$ implies (q) ". The right to use " p " itself instead of " p is true" is one of the assumptions of the logistic method.

THEOREMS DEPENDING ON POSTULATE 13.

The structure of our system ($K, Q, D, \times, ', =$) will be somewhat simplified if we add the following optional postulate (suggested by Lewis's "definition" 11-03 on p. 124).

POSTULATE 13. $a \text{ in } D . b \text{ in } D . \rightarrow . a = b$.

That is, any two elements of the subclass D are to be interchangeable in any formula of the system.

[An equivalent form of this postulate (by Def. A and 21) is the following :

POSTULATE 13a. $a \text{ in } A . b \text{ in } A . \rightarrow . a = b$.

That is, any two elements of the subclass A are to be interchangeable.]

From either 13 or 13a, with 27 and 28, we have immediately :

71. $a \text{ in } D . \rightarrow . a = aa'$ (where aa' is the zero element, z , of the system); and

72. $a \text{ in } A . \rightarrow . a = a + a'$ (where $a + a'$ is the universe element, u , of the system).

That is, the subclass D contains essentially only one element (z), and the subclass A contains essentially only one element (u). It should be noted, however, that no limit is imposed on the number of distinct elements in the subclasses B and C .

When this Postulate 13 is added to our list, Postulate 11 becomes redundant, as is shown by the following theorem.

73. $a \text{ in } A . b \text{ in } A . \rightarrow . ab \text{ in } A$.

Proof. By Def. A and 13, $a \text{ in } A . b \text{ in } A : \rightarrow : a' \text{ in } D . b' \text{ in } D : \rightarrow : a' = b'$, whence by 21, $a = b$. Hence by 20, $ab = aa = a$, whence $ab \text{ in } A$.

With this exception, all the Postulates 1-13 are independent, as shown by Examples 1-13 below. In particular, Postulate 13 is not deducible from Postulates 1-12.

On the basis of Postulates 1-13 we can now prove :

74. $ab' \text{ in } D . ba' \text{ in } D : \rightarrow : a = b$.

Proof. By 71, $ab' = z$. Hence by 23, 25, 24, $ab = ab + ab' = a(b + b') = a$. By 71, $ba' = z$. Hence $ba = ba + ba' = b(a + a') = b$. Hence by 3, $a = b$.

75. $a < b . b < a : \rightarrow : a = b$. (By 74 and 61.)

76. $a = b : \rightarrow : a < b . b < a$. (By 63.)

The last two theorems together correspond precisely to Lewis's 11-03.

EXAMPLES OF SYSTEMS WHICH SATISFY ALL THE POSTULATES 1-13.

Finite examples of systems $(K, Q, D, \times, ', =)$ which satisfy all the postulates are the following. The existence of any one of these systems proves that the postulates are *consistent*.

Example 0-1.

K = a class of four elements, represented by the "tags"

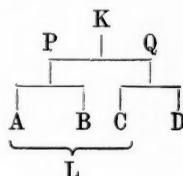
1, 2, 3, 4;

$Q = 3, 4$; $D = 4$;

ab and a' as given by the adjoining "multiplication table" and "negation table".

In this system, $P = 1, 2$, and $A = 1$, and hence $B = 2$, $C = 3$, and $L = 1, 2, 3$. Also, $a + b$ is given by the following "addition table"; and the relation $a < b$ holds whenever a dot is found in row a and column b of the following "relation table":—

	\times	1	2	3	4	'		$+$	1	2	3	4		$<$	1	2	3	4
P	A	1	1	2	3	4	4	1	1	1	1	1	1	1	.	.	.	.
	B	2	2	2	4	4	3	2	1	2	1	2	2	2	..	..	..	..
Q	C	3	3	4	3	4	2	3	1	1	3	3	3	3	..	..	..	..
	D	4	4	4	4	4	1	4	1	2	3	4	4	4	....	....	....	....



Example 0.2.

$K = 1, 2, 3, 4, 5, 6, 7, 8$;

$Q = 5, 6, 7, 8$; $D = 8$;

ab and a' as in table.

In this system, $P = 1, 2, 3, 4$, and $A = 1$; whence $C = 5, 6, 7$, $B = 2, 3, 4$, and $L = 1, 2, 3, 4, 5, 6, 7$. Also, the table for $a + b$ and the relation table for $a < b$ are as shown.

		\times	1	2	3	4	5	6	7	8	'		$+$	1	2	3	4	5	6	7	8		$<$	1	2	3	4	5	6	7	8
P	{	A	1	1	2	3	4	5	6	7	8	8	1	1	1	1	1	1	1	1	1	1	A	1	.	.	.	.	.	.	.
		2	2	2	2	4	4	6	6	8	8	7	2	1	2	1	2	1	2	1	2	2	B	2	..	..	..	..	..	..	..
		3	3	4	3	4	3	7	8	7	8	6	3	1	1	3	3	1	1	3	3	3	B	3	..	..	..	..	..	..	..
		4	4	4	4	4	4	8	8	8	8	5	4	1	2	3	4	1	2	3	4	4	B	4	....	....	....	....	....	....	....
Q	{	5	5	6	7	8	5	6	7	8	4	5	1	1	1	1	5	5	5	5	5	C	5	.	.	.	.	.	.	.
		6	6	6	8	8	6	6	8	8	3	6	1	2	1	2	6	5	6	5	6	6	C	6	..	..	..	..	..	..	..
		7	7	8	7	8	7	8	7	8	2	7	1	1	3	3	7	5	5	7	7	7	C	7	..	..	..	..	..	..	..
		8	8	8	8	8	8	8	8	8	1	8	1	2	3	4	8	5	6	7	8	8	D	8	....	....	....	....	....	....	....

(As is well known, in every finite Boolean algebra, the number of elements must be some power of 2.)

The independence of Postulates 1-12 is established by the following examples of systems (K, Q, D, \times , ' , =) each of which violates the like-numbered postulate and satisfies all the rest. (The verification in case of Postulates 4 and 5 often requires a rather laborious examination. The verification in the case of the other postulates can usually be effected by inspection.)

K = a class of four elements, represented by "tags" 1, 2, 3, 4;
 $Q = 3, 4$; $D = 4$; ab and a' as in the adjoining table (w being any number not in the class K).

\times	1	2	3	4	'
1	1	2	3	4	4
2	2	2	4	4	3
3	3	4	3	w	2
4	4	4	w	4	1

$K = 1, 2, 3, 4$;
 $Q = 3, 4$; $D = 4$;
 ab and a' as in table.

\times	1	2	3	4	'
1	1	2	3	4	w
2	2	2	4	4	3
3	3	4	3	4	2
4	4	4	4	4	1

$K = 1, 2, 3, 4$;
 $Q = 3, 4$; $D = 4$;
 ab and a' as in the table
(a at the left, b at the top).

\times	1	2	3	4	'
1	1	1	1	1	4
2	2	2	2	2	3
3	3	3	3	3	2
4	4	4	4	4	1

$K = 1, 2, 3, 4, 5, 6, 7, 8$;
 $Q = 5, 6, 7, 8$;
 $D = 8$;
 ab and a' as in table. Here Postulate 4 fails since $(7 \cdot 4) \cdot 2 = 6 \cdot 2 = 8$ while $7 \cdot (4 \cdot 2) = 7 \cdot 4 = 6$.

[illegible]

Example 5.

$K = 1, 2, 3, 4;$
 $Q = 3, 4;$ $D = 4;$
 ab and a' as in table.
 Here Postulate 5 fails,
 since $(4'2')'(4'2)' = (1'3)'$
 $(1'2)' = 3'2' = 2 \cdot 3 = 3.$

\times	1	2	3	4	'
1	1	2	3	4	4
2	2	2	3	4	3
3	3	3	3	4	2
4	4	4	4	4	1

Example 6.

$K = 1, 2, 3, 4;$
 $Q = 3, 4, 5;$
 $D = 4;$
 ab and a' as in table.

\times	1	2	3	4	5	'
1	1	2	3	4	5	4
2	2	2	4	4	5	3
3	3	4	3	4	5	2
4	4	4	4	4	5	1
5	5	5	5	5	5	5

Example 7.

$K = 1, 2, 3, 4;$
 $Q = 1, 2;$
 $D = 4;$
 ab and a' as in Ex-
 ample 0-1.

Example 8.

$K = 1, 2, 3, 4;$
 $Q = 3, 4;$
 $D = 4;$
 ab and a' as in table.

\times	1	2	3	4	'
1	1	1	1	1	4
2	1	2	1	2	3
3	1	1	3	3	2
4	1	2	3	4	1

Example 9.

$K = 1, 2, 3, 4, 5, 6, 7, 8;$
 $Q = 4, 6, 7, 8;$
 $D = 8;$
 ab and a' as in Example 0-2.

Example 10.

$K = 1, 2, 3, 4;$
 $Q = 2, 3, 4;$
 $D = 4;$
 ab and a' as in Example 0-1.

*Example 11 (violates
also 13).*

$K = 1, 2, 3, 4, 5, 6, 7, 8;$
 $Q = 5, 6, 7, 8;$
 $D = 6, 7, 8;$
 ab and a' as in Example
 0-2.

Example 12.

$K = 1, 2;$
 $Q = 2;$
 $D = 2;$
 ab and a' as in table.
 (This is the system of
 "material implication" in the
 "informal" *Principia Mathematica*.)

\times	1	2	'
1	1	2	2
2	2	2	1

¹ Compare *Bulletin Amer. Math. Soc.*, vol. 40, pp. 127-142, February, 1934.

These Examples 1-12 show that no one of the Postulates 1-12 is deducible from the other eleven. Moreover, all these examples except Example 11 satisfy also Postulate 13, so that all the Postulates 1-12 except Postulate 11 remain independent even after Postulate 13 is added.

INDEPENDENCE OF POSTULATE 13.

The fact that Postulate 13 cannot be deduced from Postulates 1-12 is shown by the following example, which satisfies 1-12 and violates 13.

Example 13.

$K = 1, 2, 3, 4, 5, 6, 7, 8$;

$Q = 5, 6, 7, 8$;

$D = 7, 8$;

ab and a' as in Example 0-2.

Here the addition table is the same as in Example 0-2, but the relation table for $a < b$ is modified as shown (a at the left, b at the top). For example, $3 < 4$ and also $4 < 3$.

		<	1	2	3	4	5	6	7	8
A	1									
	2									
B	3									
	4									
C	5									
	6									
D	7									
	8									

APPENDIX.

The following theorem 80 is of interest in connection with a question raised by Lewis on page 496.

80. $\{a(b_0, a_0) : (a_0 b_0' \text{ in } D) \cdot (b_0 \text{ in } D) \cdot (a_0 \text{ in } L)\} : \cdot \rightarrow 0$.

Proof. By 57, ab' in D . b in D . $\rightarrow a$ in D . Hence by 64, ab' in D . b in D . $(a \text{ in } D)' : \rightarrow 0$, whence ab' in D . b in D . a not in $D : \rightarrow 0$, whence by definition of L , ab' in D . b in D . a in $L : \rightarrow 0$. This formula says that the combination of the three statements ab' in D , b in D , and a in L is impossible, no matter what elements a and b we may try. Hence to assert the existence of elements a_0 and b_0 such that the combination $(a_0 b_0' \text{ in } L \cdot b_0 \text{ in } D \cdot a_0 \text{ in } L)$ actually occurs would be to assert something that is necessarily false. Hence theorem 80 is a consequence of Postulates 1-12.

Note. This theorem 80 cannot be proved from Postulates 1-12 if Postulate 11 is omitted. For, if in Example 11 we take $b_0 = 6$ and $a_0 = 5$, then b_0 is in D and a_0 is in L , and also $a_0 b_0' (= 7)$ is in D .

The question raised by Lewis concerns the deducibility or non-deducibility of the following theorem, which he numbers A8.

A8. *[a strictly implies b] strictly implies {(b is impossible) strictly implies (a is impossible)}.*

In our notation this may be written in the form

$$[a < b] \text{ strictly implies } \{(b \text{ in } D) . < < . (a \text{ in } D)\},$$

which by 61 and 62 is equivalent to

$$[ab' \text{ in } D] \text{ strictly implies } \{(b \text{ in } D) . (a \text{ in } D)' : \rightarrow 0\},$$

or $[ab' \text{ in } D] \text{ strictly implies } \{(b \text{ in } D) . (a \text{ in } L) : \rightarrow 0\},$

which by 60 is in turn equivalent to

$$(1) [ab' \text{ in } D] . \{(b \text{ in } D) . (a \text{ in } L) : \rightarrow 0\}' : \rightarrow 0.$$

Now this theorem (1) says no matter what elements a and b are taken, the combination indicated is impossible. Hence to *deny* the theorem is to assert the existence of at least one pair of elements a_0, b_0 such that the combination indicated is valid. In other words, the denial of (1) is

$$(2) \exists(a_0, b_0) : [a_0 b_0' \text{ in } D] . \{(b_0 \text{ in } D) . (a_0 \text{ in } L) : \rightarrow 0\}'.$$

If now we assume that

$$(3) \{(b_0 \text{ in } D) . (a_0 \text{ in } L) : \rightarrow 0\}' : = : \{(b_0 \text{ in } D) . (a_0 \text{ in } L)\},$$

then (2) may be written in the form

$$(4) \exists(a_0, b_0) : (a_0 b_0' \text{ in } D) . (b_0 \text{ in } D) . a_0 \text{ in } L.$$

But (4) is impossible by 80. Hence, on the assumption stated, the denial of theorem A8 is impossible. Hence, on the assumption stated, A8 appears to be a consequence of Postulates 1-12.

It this proof is accepted, it follows that theorem A8 is a consequence of Lewis's primitive propositions B1-B9 as verbally formulated. [It does not follow that A8 is a consequence of B1-B9 when these propositions are interpreted symbolically. On this latter question, compare W. T. Parry, *MIND*, vol. 43, pp. 78-80, January, 1934.]

V.—DISCUSSION.

ALTERNATIVE PERSPECTIVES AND THE INVARIANT SPACE-TIME.

THE physical reality of space-time is the reality of the field invariant between the diverse perspectives of separated space and time. Since images always appear in some such perspective, the reality of space-time cannot be correctly described in terms of images. Space-time, neutral to any standpoint of the physical agents, is conceivable but not perceivable and, in general, not subject to experience. Those numerous philosophers, led by the pragmatists, who believe experience to be the sole seat of reality, seize on this fact in order to declare that space-time as a physical entity is an ingenious fiction. Physical reality, they say, is exhaustively distributed between all the perspectives of space and time (*i.e.*, between the frameworks of reference as described in Relativity) which are alternative systems in the sense that each furnishes its own meaning of space and time which cannot be introduced into the constitution of the other systems. The independence of different perspectives is held on the ground that they cannot have any spatial and temporal element in common because such common element would be indistinguishable from the physical reality of an invariant space-time.

But physical perspectives cannot be in this sense alternative because they do not satisfy the condition of independence between systems. Only structures with no reference to reality are strictly independent. Different games form a familiar example; each game is a closed world subject to its own rules and to nothing else; thus there is no bridge between chess and chequers. Some games, called postulational systems, which only mathematicians enjoy playing, have peculiar properties with regard to their independence. Two sets of uninterpreted postulates are independent systems, even though they are alike in all respects but one, *viz.*, that at least one postulate of the first set would contradict some postulate of the second if they were applied to the same subject-matter. Euclidean geometry is independent of any non-euclidean variety, unless both are interpreted as describing the space which we all inhabit. The most meagre interpretation in terms of reality would destroy independence. Consider logic, which of all systems having some concern with actuality has it in the least degree. As the science of the form of propositions logic is abstract in the sense that it is not

dealing with their conceptual content, but by qualifying every proposition as true or false it comes in touch with facts. If propositions could have a different significance because of having different truth-values than true and false, alternative logics might be devised. But against this possibility stands the invariant denotation of the class of propositions: whatever is a proposition of the two-valued logic is recognized as a proposition within the multi-valued "logic" and *vice versa*. The denotation of the class of propositions is invariant because every proposition, no matter what truth-value we assign to it, is of itself either agreeing or disagreeing with facts.¹ Mere reference to facts rules out alternative logics. The much closer relation to facts, the relation of being a framework of actuality, must rule out alternative perspectives of space and time. The perspectives are interdependent and the equations of transformation are the witnesses of Relativity to that effect. It would seem possible, however, that the inter-connection between the perspectives is not of a physical nature. It may appear that space-time is a logical construction which allows for the transformation of co-ordinates, but to which no physical entity corresponds. This is the theme developed with striking originality in *The Philosophy of the Present*, by G. H. Mead.

Mead observes that the transformation formulæ involve the rejection of alternative space-time systems. According to Newtonian theory two such systems would be alternative because "they cannot both be applied to the same situation, except alternatively. But when we use the Lorentz transformation formulæ, we are giving the body the characteristics which belong to another space-time system and using the result in our own". Mead's illustration is the fact that "an object moving with a high velocity has an increased mass

¹ Discussing the question of "alternative logics" with Mr. C. I. Lewis (*The Monist*, July, 1933) I argued in my *Note* that the three-valued system (taken as a representative of "alternative logics") is not logic because its truth-values, such as "doubtful", are not constitutive of the significance of propositions but merely reflect the changing stages of human ignorance. In the *Addendum* I said that the three-valued system is not alternative to logic since its values are expressible in terms of "true" and "false", e.g. "doubtful" means "either true or false but one does not know which". The connection between these two Notes, which judging from one of Mr. Lewis' remarks he did not see, is this: In so far as an alternative system is alternative it is not logic because it refers to extra-logical ground; in so far as it is logic it is not alternative because its truth-values are translatable in terms of "true" and "false". One must observe that the proposed expression of "doubtful" in terms of the truth-values of logic is not a combination of "true", "false", and "doubtful", as Mr. Lewis would have it, but the resolution of the last term into the first two together with some additional constituents irrelevant to logic. These extra-logical constituents when associated with "true" or "false" are just as unfit to determine a permanent classification of propositions as, for example, the combination "false-but-attractive-to-a-prominent-logician".

because it is characterized by different space, time and energy coefficients" than the coefficients of the system of the observer. The two systems are interconnected in so far as the same object participates in both. The participation is described as a readjustment which the object must undergo in order to maintain itself in both perspectives: it is moving with respect to one and is at rest with respect to the other. This process of readjustment is an instance of the basic category of sociality. Sociality, in its familiar human variety, is the capacity of treating ourselves as others do. There is social organization, when the members of a group can "take the rôle of the other", i.e., when each directs his activity according to his fellows' attitude towards his actions. The denotation of sociality is then extended from the field of human relationships to the field of space-time perspectives on the ground that one's taking several attitudes towards oneself is strictly analogous to the object's participation in several perspectives. Mead concludes that sociality thus understood dispenses with physical space-time. For it performs the function of correlating different perspectives by residing in them severally and not by subsisting between them as an autonomous physical reality. This sociality conception, doing away with physical space-time, is reminiscent of the co-ordination between the monads. And yet Leibniz needed the mediation of God for his harmony. Mead, himself, when dealing with sociality in its human aspect, would have to recognize some mediation, at least the mediation of a common region of space and time. He would have to admit, for example, that the premises of a club mediate between its members. But then his right to extend sociality to the regions of space and time themselves, without granting that they must in their turn require some mediating agency, must be questioned. The extension can be done only at the cost of assuming a metaphysics of pre-established harmony.

Since such a metaphysics would be undesirable to Mead himself, let me re-examine his evidence for the physical independence of perspectives. He observes that two systems of space and time are described by two sets of numbers which are obtained by two independent sets of operations of measurement; and he stresses the fact that both sets of operations are performed within one of the systems (though it is immaterial within which one). Since the handling of instruments in measuring is unquestionably physically real, it follows that physical reality resides in both systems severally, whereas their correlation might merely be the correspondence between two equations of transformation (calculated each in one of the systems) between the two sets of numbers. But the fact that physical reality is distributed between the perspectives though suggesting the possibility does not prove of itself that it is distributed exhaustively, so that no physical entity underlies their correlation. This Mead wants to prove by following the operationalist argument about the concepts of physics. The argument begins with the assertion that

a concept of physics does not describe any objective feature of the physical world, but merely denotes a set of operations by means of which a number is assigned to an instance of the concept. It proceeds with the comment that different sets of operations must stand for different concepts, and it concludes that different perspectives as corresponding to different sets of operations may be described only in terms of their own concepts. This conclusion may mean, just what Mead wishes, that the perspectives are alternative systems.¹ But whatever it means, it need not be accepted; because its premises can be criticized on the score that, contrary to the operationalist intention, they do not agree with the relativity of physical properties. A property is relative when it is the description of something which with the change of the reference-system will be described otherwise. For example, simultaneity is relative because it describes a relationship between two events which is described as succession from another standpoint moving with respect to the first. Suppose there were no generic temporal property specified as either simultaneity or succession, then these two instead of being relative would be independent features confined each to its own perspective. Such an independence of non-relative properties is what the operationalist theories, with the exception of Mead's, come to. The theory of Mead by recognizing the non-physical interdependence of perspectives allows for the determinable or generic property, provided it is a logical operation which, as a disjunction of determinates, it is. Unfortunately for Mead, the admission of a determinable of which the relative properties are different specifications is insufficient to account for their relative nature, for they could belong to the same determinable and yet be characters of several independent situations. Thus if an observer A disagrees with another observer B who judges two events as simultaneous, their disagreement need not imply relativity if they are talking about two distinct pairs of events. There must be then the further condition that the determinates under the same determinable should refer to the same thing, for they would not be relative if each of them characterized a situation different and independent from the situations characterized by the others. And the condition of reference to the same thing can be satisfied only if there is some property which determines it uniquely. Obviously, this determining property must be specific. It also must be non-relative, otherwise the definition of relative properties would involve infinite regress. Finally, it must belong to another determinable than the corresponding relative properties belong to, because two determinates under the same determinable characterize the same thing only with respect to two standpoints. The relative characteristics may be

¹ On the other hand it may mean that Relativity deals with alternative sets of measurements and not with the physical properties themselves. This interpretation will be found in Mr. Sellars' book, *The Philosophy of Physical Realism*, and it is surprising that Mr. Bridgman, who censured the book in a review, did not observe that it was his own spiritual offspring.

said to be partial representations of the entity determined by the invariant property.

These considerations demonstrate the physical reality of space-time. There can be no determinate interval of time of which simultaneity and succession would be specifications; but there must be a determinate and invariant space-time interval which is partially represented as simultaneity in one perspective of separated space and time and as succession in another. Thus the relativity of simultaneity is the evidence for the recognition of the existence of the space-time interval and, along with it, of the physical reality of space-time.

A. USHENKO.

VI.—CRITICAL NOTICES.

Examination of McTaggart's Philosophy. Volume I. By C. D. BROAD, Litt.D. (Cantab.), F.B.A. Cambridge University Press, 1933. Pp. lv + 460. 21s.

IN this book Prof. Broad gives not only an exposition and criticism of what McTaggart says in *The Nature of Existence*, Vol. I., but also independent discussions on many points of current interest. It is important to emphasise this fact because there is considerable danger that people who would be sorry to miss what Broad says about problems in which they are interested may nevertheless do so because they wrongly suppose that this book is wholly concerned with "that fantastic idea of McTaggart's about the universe being a self-reflecting unity". Bearing this in mind I have with some hesitation decided to give first an account of what Broad says on certain topics and then to say something about his treatment of McTaggart, although this involves departing from Broad's own arrangement. Broad deals first with reality and existence and then, in the following order, with characteristics and particulars, the theory that every particular has some distinguishing but purely general character, logical and causal necessity and contingency, groups and classes, the theory that every particular has parts which are particulars, the proof that every particular has a distinguishing yet general character which entails distinguishing yet general characters for the infinite hierarchies of its parts, the proof that such a distinguishing character can be provided only by a relation of *determining correspondence*, and finally the bearing of *determining correspondence* on the unity of the universe.

I. BROAD'S INDEPENDENT DISCUSSIONS. (i) *Propositions and Truth*.—There certainly are propositions in the sense that we are sometimes speaking the truth when we are uttering sentences in which the word 'proposition' occurs (pp. 58, 59). The question is: Are propositions reducible to judgements¹ or sentences, or are they a peculiar and irreducible kind of complex unity? These irreducible unities are supposed by people who "believe in propositions" to be the supreme objective constituents in judgements, so that if J judges that A has R to B, then the fact that J is judging that A has R to B contains an objective constituent which contains all the

¹ In that sense of 'judgement' in which a judgement contains the judge because it is a particular fact of the form *X is now judging that S is P*.

other objective constituents, namely A, R and B, interrelated into a peculiar kind of unity¹ (p. 62, l. 3).

Broad believes that propositions are not irreducible entities; he believes that to say something about the proposition that A has R to B is just to say something (though not quite the same thing) about all cases of someone's believing, disbelieving or doubting that A has R to B.

Is it possible to account for the *intentionality* of judgements on these lines, i.e., the fact "that in every judgement something is believed or disbelieved" (p. 64)? In order to do this Broad accepts an analysis of judgement according to which the relations of believing and disbelieving are not ultimate but are to be analysed very much as suggested by Prof. Stout.²

Stout says that he accepts Broad's statement of his theory. There is however this important difference between them—Stout believes that propositions are irreducible,³ that they are possibilities which are a peculiar sort of unity constructed out of the elements of facts but not themselves facts unless they are *realised*, while Broad does not believe this.⁴ With this in mind let us consider Broad's statement of Stout's theory.

"Suppose that I am looking at a sheet of paper, of which only one side is visible from where I am standing. Suppose I make the judgement that the other side of this paper is blue. What is really happening? . . . I *know* the following *facts*, and do not merely have beliefs. (i) I know that there is another side to the paper. (ii) I know that this other side must have some colour or other, . . . (iii) I know with regard to blue, green, yellow, red, white and black, that they are determinates which fall under the determinable of colour. What I do *not* know is the fact about the determinate colour of the opposite side of the paper. I *believe* that it is blue. If it is in fact blue, my belief is true. If it is in fact red or green or yellow or black or white my belief is false. What precisely is involved in the fact that I believe it to be *blue* . . . ?

"The fact that I believe this must consist in the fact that my thought of the alternative *blue* stands in a certain special relation to my three states of knowing, which have been mentioned above, whilst my thoughts of the other alternatives do not stand in this relation to these three states of knowing. My thoughts of the other alternatives may indeed stand to these three states of knowing in a certain special relation which is *opposed* to the special relation in which my thought of the alternative blue stands to these three states of knowing. In the first case I just believe that the opposite

¹ See Moore "Facts and Propositions." *Aristotelian Society*, Supplementary Volume VII.

² "Real Being and Being for Thought" in *Studies in Philosophy and Psychology*.

³ Though a true proposition, since it is realised, is identical with a fact.

⁴ Broad unfortunately says very little about possibilities. See p. 54.

side of the paper is blue, without either believing or disbelieving that it is red, etc. In the second case I both believe that the opposite side is blue and positively disbelieve that it is red, etc. Let us call these two opposed relations the relation of 'being inserted' and the relation of 'being extruded' respectively" (pp. 72, 73).

According to this theory "my thought of blue is inserted into the noetic framework composed of my three states of knowing" just means "I am believing about what I know to be the other side of the paper that it is blue" (p. 73, l. 3, from the bottom). Therefore the theory reveals nothing to us concerning the structure of judgement unless we are also told that the relation of insertion is fundamental while that of believing is not. This further claim is made, I fancy, because it is held that every belief, even the simplest, contains knowledge in that (1) it is always of the form *X believes that what has D (determinable) has d (determinate)*, while (2) this fact includes the fact that *X knows* that something has *D*. Many people would deny both these premisses.

Broad thinks that this theory accounts for (*i.e.*, provides a plausible analysis of ?) the intentionality of judgements. He says "Now supposing the analysis of judgement which I have been describing were true, the last challenge of the supporters of the Proposition Theory could be met. In judgement whether true or false, there really is a unique kind of complex object before the mind. But it is a fact and not a proposition; it is known and not believed; and, in judging, there are always other terms before my mind" (p. 76).

But (a) is there any need to meet the remark that in judgement *something* is believed? For that we can speak in this way and speak truly has practically no tendency to show that in judgement "there really is a unique kind of complex object before the mind". If I lecture to the Board of Agriculture I lecture to something, and if I like the average man I like something; but in neither case is there a unique kind of complex object before my mind. Broad is not likely to have overlooked the possibility of such an answer as this; but I think that others besides myself would like to see set out more clearly what he means by the 'intentionality of judgements' and why he thinks it renders plausible the presence of a complex object. (b) I do not see that the complex object provided by Stout meets the case, if Broad is right when he says that this complex object is those *facts* which are *known*. For what was needed was something to be believed and Stout's complex object cannot be this something if "it is a fact, and not a proposition; it is known, and not believed" (p. 76, l. 32).

(ii) *Characteristics (a) Composite?*—In chap. vi. it is argued that McTaggart's statement that every composite characteristic is analysable into simple characteristics is true only in the sense that when we speak of a composite characteristic this is just a convenient way of speaking about several simple characteristics which apply to the same thing. Thus (see p. 108, l. 9), "A is awed by B" would

be simply a short way of saying "A is fearful of B and A admires B" (given that awe is a mixture of fear and admiration). There is thus no special sort of unity called a composite characteristic.

It seems very proper to deny composite characteristics and to put the complexity into the facts. But surely sometimes a composite characteristic is not reducible to a *conjunction* of facts? Suppose I say "you are pleased with that pipe". I thus predicate a composite characteristic of you; for it follows from what I say that you are both (a) noticing the virtues of the pipe and (b) pleased, *i.e.*, that (a) you are noticing its virtues and (b) you are pleased. But my original sentence is not adequately translated by this conjunctive sentence since the force of the 'with' of the original is lost. This is clear when you are (a) "tasting" your pipe (with loathing) and (b) pleased (with the respect your hostess is showing for your particular opinions). From this it appears that facts are not only conjoined; sometimes they *blend* with one another and *complete* one another.

Broad would I think allow this, for he writes (p. 116) a section on inseparable characteristics such as loudness and pitch, hue, intensity and shade.¹ This section suggests the need for a kind of analysis, not so far recognised, which might be called the *unfolding of the blending of determinates*. The hue, intensity and shade of a coloured patch *blend* in a way which is not adequately expressed by saying that they co-inhere in the same patch, and it is this *completing* of the one in the other which renders them inseparable. Again, the relation between the fact that I am seeing a dog and hearing a car and feeling annoyed at the same time is not adequately expressed by 'and' nor even by saying that these facts have a common subject; for consider unconscious perceptions.

(b) *Analysis*.—On page 111 is an account of analysis in terms of "aggregate resemblance". We can make others know how we are using words, such as 'negro', 'man', 'black', only in the last analysis by exemplification, to use Keynes's term. The exemplification may be *direct*, as when I say "'x is a negro' means 'x either is Pompey or Uncle Tom or Topsy (mentioning certain negroes by name), or has to them the kind of aggregate resemblance which they have to each other,'" or the exemplification may be *indirect*, as when I say "'x is a negro' means 'x has to Blackie, Smut, Sooty the sort of resemblance (black) they have to one another, and also has to Bill, Wong and Ivanovitch the sort of resemblance (human) they have to one another,'" In the latter case we *analyse* as we exemplify.

Does this mean that whenever I say "So and so is a negro" I always have in mind a set of particulars (not necessarily always the same) by which I describe to myself or others the qualities which make up the connotation of negro? One fears that such a theory

¹ See W. E. Johnson, *Logic*, part i., p. 183, and C. H. Langford, *MIND*, October, 1929, p. 443.

may be circular; since to have a particular in mind when that particular is not present may be to think of it as the thing having such and such qualities. Perhaps all that Broad wishes to say is that the explanation of what is meant by a word must depend ultimately upon exemplification, and that indirect exemplification reveals analysis. Yet what he says on page 88 suggests that he finds very well worth consideration the view that the exact likeness of, e.g., two sense-data is not to be analysed into their possessing a common quality. He says "... it does not seem altogether unreasonable to suggest that the notion of common qualities may be a convenient fiction to systematise and abbreviate the statement of a complicated set of inter-related facts about likenesses and unlikenesses" (p. 88).¹ This brings us to

(c) *Stout's Theory of Universals*.—It is better to speak of Stout's theory of likeness; for 'likeness' is a word which we all use in expressing facts admitted by all, while the word 'universal' and even the words 'quality' and 'relation' may be so used as to imply a certain view about the analysis of these facts—a view incompatible with Stout's.

If you drop red ink on a sheet of paper you may see two or more patches of colour which are exactly alike, and sometimes you hear two noises which are exactly alike. The question is what is the analysis of the fact that the two patches are exactly alike in colour?

At least three possibilities present themselves. (1) The two patches are simple,² i.e., have no internal structure (contrast facts), and the relation of exact likeness in respect of colour is a simple relation (contrast *grandparent of*). On this theory "This (is) like that" well displays the structure of the fact it expresses. This according to Broad is Stout's theory.³ (2) The two patches have an internal structure (comparable to facts) and contain a subject (particular) and a predicate (universal) united in an indefinable way expressed by saying that the predicate *characterises* the subject; ⁴ to say that the relation of exact likeness in respect of colour holds between two patches is to say that their subjects are characterised by numerically the same predicate which is a colour. (3) The two patches have an internal structure and contain a subject (particular) and a predicate (not universal) which characterises it; but the relation of exact likeness is not that of having *identical* predicates, it is that of having predicates *of the same kind*, i.e., exactly alike in a new sense appropriate to predicates. Broad does not consider this third theory.

¹ Compare J. Bentham "Quality itself is but a fictitious entity", *Ontology*, chap. ii., section x., and A. J. Ayer in a recent paper to the Aristotelian Society.

² Of course being patches they have spatial parts. We are concerned with a different sort of complexity.

³ Compare A. J. Ayer, *op. cit.*

⁴ Sometimes the patch is identified with the particular. This makes a difference only to the verbal expression of the analysis.

Nevertheless Stout says that it is the most like his of the three. However on further enquiry of Stout I have come to the conclusion that a fourth theory is most like his. On this fourth theory a red patch has not an internal complexity so like that of a fact; nevertheless it has internal complexity and is not to be identified with its quality red. It is a complex, a unity of qualities.¹ If you ask "What qualities?" then the answer is "The intrinsic qualities which it possesses", provided that 'possesses' is not given a philosophical significance, *i.e.*, provided nothing is assumed about the analysis of *possesses*. If you now ask "what according to Stout is the analysis of *possesses*?" the answer is "*This patch possesses redness, i.e., has redness*", means "*This patch contains* (in a sense appropriate to the peculiar sort of unity which it is) ² *redness*".

On this view one patch is exactly like another in respect of colour when and only when the one contains a colour which is exactly like the colour which the other contains. The sense in which the one colour is exactly like the other is not the sense appropriate to patches but a new sense appropriate to qualities. [The likeness appropriate to patches is a likeness in this or that respect, the likeness appropriate to qualities is an *inner* likeness, *e.g.*, starting from red and yellow and passing towards orange we obtain hues which have more and more *inner* likeness to orange.]³ To say that there are universals is to say that there are qualities which are like each other in this sense.

Broad urges two objections to Stout's theory. (1) On page 88 he says, "Suppose all statements of the form '*x* has the quality *q*' correspond to facts of the form '*x* has the relation *R* to something'. If *R* be a symmetrical relation, as it would be if it were a relation of exact likeness, the following consequences would result. It would be logically impossible for one statement of the form '*x* has *q*' to be true unless at least one other statement of the same form about *another* particular *y* were *also* true. It would, for example, be logically impossible that there should have been only one noise or only one coloured sensible." The answer to this is that on theories (3) and (4) there might well be only one red patch though if there were it would be incorrect to say that it had the quality or universal red.

(2) On p. 140 Broad says (α) "Now it is difficult to see what objection there could be to a common quality inhering in each of a number of particulars which would not apply equally to a common relation interrelating the members of each of a number of different sets of particulars"; and he claims (β) that Stout's exact likeness would be such a relation. And (β) must be admitted unless Stout

¹ It is not a complex quality.

² And appropriate, I should think, to the sort of quality in question—one sense for spatial characters, *e.g.*, *round* and *large*, and another sense for extensive characters such as *red*, *hot* and *hard*.

³ I do not know that Stout would accept the statement that his likeness between qualities is this inner likeness.

accepts the consequence that if *a* is exactly like *b* in hue and *c* exactly like *b* then the likeness of *a* to *b* is not identical with but exactly like the likeness of *b* to *c*, and further that if in addition *d* is exactly like in hue to *a* then the likeness between the likeness between *a* and *d* and *a* and *b* is not identical with but exactly like the likeness between the likeness between *a* and *b* and *a* and *c*. But Stout does accept this. It does not involve a vicious circle, but I do not like the look of it.

There is another method of meeting Broad's objection. Surely, contrary to (α), it is perfectly possible that there should be a reason for denying that qualities are universal which is not equally a reason for denying that likeness is. If one blue patch is larger than another then the one involves more particular (more *content* in McTaggart's language) than does the other; some people would say that the one equally necessarily involves *more blue*. There is no need to say the same thing about relations. Relations are very different—as Mace says "Qualities have more body to them than relations", and *à fortiori* there is no need to say the same thing about Stout's relation which does not relate patches but only their qualities.

(iii) *Substance*.—First, Things which "persist through" periods are distinguished from Processes which go on for periods. Then arises the question whether things or processes can be reduced to each other or some third thing, *i.e.*, whether (α) "sentences which contain thing-names could all be replaced without loss or gain of meaning, by sentences which contain process-names and do not contain thing-names" or (β) *vice versa* or (γ) sentences which contain thing-names and sentences which contain process-names could both be replaced by sentences containing neither (p. 151). (α) and (β) are each compatible with (γ).

Broad rejects the view that every process is reducible to a set of facts about a thing; (*a*) because some processes, *e.g.*, buzzings, are not states of things, and (*b*) because "a movement can quite literally be 'seen' to be constant or variable in direction" while it is "nonsensical to talk of 'seeing' (in this quite literal sense) a set of facts" (p. 156).

One may agree with this conclusion and realise how much that is valuable is contained in the discussion which leads to it, and yet find in that discussion much which is thoroughly unsatisfactory.

(1) It is true of course that some processes do not contain things in the sense of 'thing' in which a chair or a gnat is a thing, and in the sense of 'contain' in which the collapse of my chair contains my chair. It is true further that some processes such as buzzings and boomings do not contain things even in that sense of 'thing' in which a coloured or hard patch is a thing, and do not "contain a subject" even in the sense in which the movement of a coloured patch "contains a subject". But it does not follow that they do not contain a subject in any sense, nor that these subjects are not particulars. For, in the first place, things, even coloured patches,

must be distinguished from particulars and, in the second place, the difference between a movement and such a process as a buzzing is not to be expressed by saying that the one has a subject while the other has not. It is true that a movement is always the movement of *something* while a buzzing is not a buzzing of something in the same sense; but the difference so expressed is the difference which arises because a movement is a process of the second order with respect to the pervading of certain areas by sound-qualities, *e.g.*, buzzings, or colour-qualities, *e.g.*, greenings. For a movement always contains a pervading—a loud noise, a hard patch, a green patch.

The words 'redding' and 'greening' Broad adopts from Mace and me in *MIND*.¹ These words are to be used for seen *processes* (as opposed to patches) just as 'buzzing and hissing' are used for heard processes. But Broad says that colourings are particulars. This is the last thing Mace and I wanted. A colouring is not merely not in fact naked, like a man who is wearing clothes, but cannot be naked, like clothes or a clothed-man. After all particulars are not naked—they have qualities. But colourings (if one may mention their analysis in describing them) either are qualities which are concrete (Stout) or contain qualities. Thus Ramsey said, usefully but carelessly, that a red patch is the fact *Red here now*. He should have said "is reducible to the fact *Red here now*", and then added, as I believe Broad would (see p. 160), that the fact is "an artificial intellectual construction" from something of the same formal structure but occupying a time—a redding, which on this analysis would be the pervading by a quality of a region for a period.

(2a) That processes, for example movements, can be seen in a sense in which facts cannot, proves that processes are not *identical* with facts but it does not prove that they are not reducible to facts—it may be that to say something of a process is merely to say something about facts though not the same thing (see p. 134, last line but one).

(2b) That both movements and things can literally (*i.e.*, properly) be said to be seen does not prove that they are both substances. For there may be more than one proper sense of 'see'. Nor does the fact that processes have characteristics, such as *rapid* and *loud*, prove that they are substances. On the contrary it is as great a mistake to make processes and things species of a common genus *substances* as it is to make them species of a common genus *complexes*.

Such words as 'substance' and 'event' are not ordinary common nouns like 'dog' and 'stick'. To say "X is a substance", "X is a process" or "X is a fact" is not to say something about X but is to say about the word 'X' which of the several "languages" which make up English it falls into—whether thing language, process language or fact language.

¹ *MIND*, October, 1931, p. 463.

That Broad could himself have made these criticisms is apparent from his last paragraph on page 158. There he explains how movements might be reduced to facts to the effect that a certain quality is pervading "now one and now another region of Absolute Space". And, as he says in *The Mind and Its Place in Nature* (pp. 588-590), "what is a region of Space on this theory but a timeless particular in which sometimes one and sometimes perhaps no [?] qualities inhere?" So he distinguishes between things and regions of Space which would be particulars and would be in an obvious sense the subjects of those pervadings of which he speaks. It follows that movements are of a different order from pervadings since they are reducible to them. Again, if we take the adjectival view of Space explained in *The Mind and Its Place in Nature*, pp. 592-598, and accept as ultimate the translation of stuff (p. 157), pervadings still have timeless particulars as subjects though these particulars are now mobile in the sense that they gain first one positional character and then another.

Having suggested that things may be reduced to material events which consist in qualities pervading timeless particulars, Broad asks whether we can dispense with the subjects of these pervadings, these particulars which persist through time. The first difficulty in the way of doing this lies in the fact that some pervadings change in certain respects: for example, a buzzing may become louder. If we accept the persistent subject theory, such change consists in change in the qualities of this subject. Broad, trying to avoid this persistent subject, holds that to say that the buzzing has become louder is to say that there are two successive buzzings such that though the later is louder than the earlier they are nevertheless alike in a way which makes them phases of the same buzzing. This likeness is defined in terms of the new and important conception of Quality-Ranges.

There are two difficulties about this answer. (A) Surely similarity between two successive buzzings, even that special sort of continuous similarity which Broad defines in terms of quality-ranges, is never sufficient to guarantee that they are successive phases in one buzzing? Suppose that a buzzing goes on from t_1 - t_3 so that its second phase from t_2 - t_3 has the requisite likeness to its first phase from t_1 - t_2 to constitute them phases of the same process. Then there is no logical impossibility in there being a hundred other buzzings going on elsewhere which are exactly like the second phase of the original buzzing and therefore have that likeness to the first phase of the original buzzing which would render them *all* second phases of that buzzing. Broad would deal with this in terms of a special kind of quality-range called a *place-range*. But is difference of place a qualitative difference?

(B) What is similar to what? In other words, what are the subjects of the successive similar buzzings? Broad would perhaps answer "The buzzings themselves are similar; co-terminous quality-

ranges belong to them; they have no subjects". But when certain ambiguities in 'process', 'quality-range' and 'belong to' are removed this answer can be seen to be unsatisfactory.

(a) '*Process*.'—The ambiguity in this word is the same as that which Mr. Braithwaite points out¹ for 'event'. 'Process' may be used in a non-philosophical sense as a general term for boomings, buzzings, achings and spells of depression. Processes in this sense are or contain qualities. Stout would say that they are particular qualities. Others would say, as Broad suggests, that each consists in the pervasion of a certain area by a certain quality. On the other hand 'process' may be used with a philosophic significance. It has been held that a 'process' in the first sense contains as subject not a persistent particular extended only in space, but a particular which is not persistent, being extended not only in space but also in time. Now 'event' has been, and 'process' is apt to be, used for these temporally extended particulars.

Broad would say (and rightly) that in neither sense do processes possess qualities, though we may say for convenience that 'momentary slices' of them do. Processes possess *quality-ranges*.

(b) '*Quality-Ranges*.'—The notion of *quality-ranges* may be introduced, though not analysed, in terms of determinate qualities. "Suppose we take a certain noise which began suddenly, went on for a certain period with continually increasing loudness, and then suddenly stopped. It is plainly nonsensical to ascribe any determinate degree of loudness to the process as a whole or to any phase of it. If anything here could be said to have a determinate degree of loudness it would be an instantaneous cross-section of the process. This would not be a phase of it, and has all the appearance of being a highly artificial intellectual construction. But we could say of the process that it has a certain range of loudness" (p. 160). The quality-range of a process must not be defined as the difference between the determinate quality belonging to the first moment of a process and the determinate quality belonging to the last moment; that difference is the *magnitude* of the quality-range. The quality-range is the pattern (in time) of the determinate qualities. Broad's example of the loudness of a noise suggests that by a quality-range he means a pattern of qualities of a process (sense 1). On the other hand the example of the redness in a redding suggests that a quality-range is a pattern of qualities in a process. Broad ignores this distinction. He says "a colouring . . . has a colour range . . . just as a noise-process has a loudness range" (p. 165), and "A colouring does not have a determinate colour, any more than a noise has a determinate loudness . . . but it is possible to give a meaning to the statement that a certain instantaneous cross-section of a colouring has a certain determinate colour. We have seen how to do this in the simple case of noises, and no difference of principle is involved" (p. 165).

¹ *Aristotelian Society*, Supplementary Volume VII., p. 228.

But a difference of principle is involved. Noises can be loud but colourings cannot be red. There are qualities and relations of processes, such as *occurred after Christ's birth, is a case of love, is a race*. And there are qualities and relations in processes; these are those the realisation of which in a temporal pattern is a process. 'Red' stands for a quality in processes; 'loud' stands for a quality of processes, because it means *has such and such noise-qualities in it*.

Broad's examples then do not enable us to decide whether he means by a Quality-Range (α) the pattern of qualities which a process (sense 1) contains, or (β) the pattern of qualities which a process (sense 1) possesses, qualities of the form *contains q_1 , contains q_2 , . . . contains q_n* , where $q_1, q_2 \dots q_n$ are the qualities which a process contains. The former is the more fundamental sense and might be called an internal quality range.

(c) 'Belongs to.'—These ambiguities in 'process' and 'quality-range' may well be trivial for certain purposes but it is easy to see the confusion they may cause in this matter of ultimate subjects. A quality-range (internal and fundamental sense) belongs to a process in the sense that it is in a process (sense 1); but this leaves unanswered the question "what does the quality-range characterise, i.e., what is the subject in a process (sense 1)?" It is true that in a sense a process has no subject; for a process (sense 2), if there were such a thing, would be a subject and not contain one and would be what an internal quality-range characterises in the sense that it is spread over it in space-time. (Compare the way in which a pattern of qualities is spread over a spatially extended particular.) But do processes (sense 2) exist?

Some of Broad's examples, and the fact that he considers it not senseless to suggest that a process is the pervading of a region by a quality (p. 158 and *The Mind and Its Place in Nature*, p. 590), suggests that he is using process in sense 1. Thus he avoids the doubt whether there are processes. On the other hand he sometimes talks of processes as particulars (p. 164, last line but one) and thus avoids the question, "What are the ultimate subjects of processes?"

To put the point another way. The question is "What is the ultimate subject of a buzzing?" Broad does not wish to answer (α) "A persistent particular". To answer (β) "It has no subject" would require careful discussion, unless buzzing is taken in sense 2, so that it means the temporally extended particular which a buzzing (sense 1) contains. To answer (γ) "The process itself" is a rhetorical form of (α) unless 'process' is taken to mean 'temporally extended particular'. Hence Broad has provided no answer to his question unless it be in terms of temporally extended particulars.

But is not the expression 'temporally extended particular, non-sense? Particulars begin to have certain characters, e.g., hot, and later cease to have them; but to speak of the earlier parts of a particular continually ceasing as the later parts begin is nonsense, which is obvious directly one distinguishes things which are logical

constructions out of particulars-having-characters from particulars themselves. Broad himself says "... the generation or destruction of a simple substance seems to be something quite unintelligible to the human mind " (p. 272). He adds " It does not, of course, follow that it could not happen ". But it is unintelligible to us because it is nonsense.

It remains open to Broad to suggest that processes (sense 1) contain no particulars in the usual sense of *existent* particulars. It would then be asked, " What are internal quality-ranges quality-ranges of ? And what gives particularity in the sense of non-repeatableness elsewhere or elsewhen to a greening or a buzzing ? " Broad might answer " Concrete Quality-Ranges ".¹

Concrete Quality-Ranges may be introduced as follows : A redding has many *abstract* quality-ranges, for example hue-range and intensity range (see p. 165). But these blend with one another and are sections of a single determinate and complete quality-range (see pp. 116-118). Each could be represented by a curve ; super-imposed the curves would perfectly intimate *the* determinate and complete quality-range for the process. Next suppose that determinate qualities have particularity, *i.e.*, that the red of this patch is numerically other than the red of that. Then *the* quality-range for a process has particularity and may be called its concrete Quality-Range. Finally identify the process with its concrete quality-range as follows : say that " This hue-range *belongs to this process* " means " This hue-range *blends in this concrete quality-range* ". By giving particularity to concrete quality-ranges an account can be given of the twoness of two patches which are, as we say, qualitatively exactly alike, without saying that difference of place is a qualitative difference.

(iv) *Causation*.—Change is discussed and then four *prima facie* axioms about causation are stated. Many of us will be delighted that someone has had the courage to set out what we do know about causation instead of merely lamenting our ignorance or cheerfully substituting something quite wrong like regular sequence. Broad can see no other self-evident truth about causation to add to his four. Could we not add one of the principles upon which Stout bases his argument in *Mind and Matter* ?² This principle may be roughly stated : If two complete causes differ specifically but not generically then their effects will differ specifically but not generically.

Broad supports the view that causal laws are to be analysed in terms of singular causal facts of the form *That caused this*, and not *vice versa*. Broad is not claiming that we sometimes know *That is the sufficient cause of this* but that we sometimes know *This would not have occurred without that*. Such a singular statement must not be confused with *This sort of thing could not occur without that sort of thing*.

¹ Broad does not mention this notion. It is arrived at by combining Broad, Stout (theory of qualities) and Langford, *MIND*, October, 1929, p. 441.

² See for example, *Mind and Matter*, pp. 132, 133.

It would be better to put what we know in a positive form *That has a causal bearing on this*; for it is difficult to see how we could intuit negative facts. In connection with this intuiting of causal influence it is useful to read Broad's discussion of Intuitive Ideas especially pages 39-53.

(v) *Necessity and Contingency*.—In chap. xi. logical and ontological necessity are defined in terms of consistency. A proposition is logically inconsistent with another when this inconsistency depends *wholly* upon the *forms* of the propositions. A proposition is ontologically inconsistent with another when this inconsistency depends *partly* on the *content* of the propositions.

In chap. xiv. there is a discussion of internal and external relations which is summed up as follows: "Consider any particular [A] which in fact has a certain characteristic C. Then there are two cases to be distinguished, *viz.*, (a) where I am acquainted with this particular, and (b) where I am not acquainted with it, but know it only as the sole instance of a certain characteristic ϕ . In the first case I can intelligibly suppose that it might not have had C, provided that C is a characteristic of the form "having R to an instance (or all instances, or the only instance) of ψ ". For I can intelligibly suppose that ψ , which in fact has instances, might not have had any. But, if C be a pure quality, or a relational property of the form "having R to B", where "B" is for me a proper name of another particular with which I am acquainted, I cannot intelligibly suppose that the former particular, which in fact has C, *might not* have had C. I equally cannot intelligibly suppose that this particular, which in fact has C, *could not but* have had C. Neither necessity nor contingency has any application here, just as neither oddness nor evenness has any application to numbers like e or π or $\sqrt{2}$. In the second case it is always intelligible to make the supposition that ϕ might have had one and only one instance, and that this *might not* have been characterised by C, though in fact the one and only instance of ϕ is characterised by C. The supposition can be rejected if and only if . . . it is impossible for anything to have ϕ and lack C" (p. 260). Broad says that when in fact this is adjoined to that then "This might not have been adjoined to that" and "This could not but have been adjoined to that" are both meaningless where 'this' and 'that' are pure proper names. "The first would have a meaning only if a meaning could be attached to the sentence 'There might have been this and that, yet the two might not have been adjoined'" (p. 259). Broad maintains that the first part of this sentence is nonsense on the ground that "if 'B' is a genuine proper name . . . both the sentences 'B is' and 'B is not' would be quite meaningless" (p. 252).

It is true that in the strictly usual sense of 'is' or 'exists' "B is" or "B exists", when 'B' is a proper name for a particular, is nonsense. So it is when 'B' is a proper name for a characteristic; thus "Green exists" and "Canine exists" are nonsense. This is

because 'exists' is properly usable only with substantives—"Dogs exist" is all right. But though nonsense, "Green exists" is easily interpreted to mean "Green applies to something". Similarly "This exists" means "Something applies to this".¹

Besides disputing one of Broad's premisses we may disprove his conclusion. "This might not have adjoined that" means "The proposition *This does not adjoin that* is not internally inconsistent" and this is not nonsense. It may be thought that Broad would maintain that "*This adjoins that* is not internally inconsistent" is nonsense on the ground that it means "The proposition *This adjoins that* is contingent" while this last sentence is nonsense.

But is it nonsense? What Broad says in favour of his view that it is, explains his holding that view without justifying it. He says that 'necessary' and 'contingent' though "mutually exclusive are not collectively exhaustive predicates of facts" (p. 260). And this he holds because he believes (quite rightly it seems to me) that 'necessity' and 'impossibility' make sense only with respect to the necessary implication or exclusion of one character by another. Such implication or exclusion could not occur in facts of the form *This has q* or *This has R to that*, where 'this' and 'that' are names. Broad concludes that to say of such facts that they are impossible (or necessary) is to speak not falsely but nonsensically. And it is true that if 'impossible' be used in its fundamental sense in which we say "It is impossible that F_1 and F_2 " then " F_1 is impossible" is nonsense. But we can *derivatively* use 'impossible' with non-conjunctive sentences and write " F_1 is impossible", meaning "The sentence ' F_1 ' expresses two facts F_a and F_b such that it is impossible that F_a and F_b should both be the case". Similarly " F_1 is necessary" means "The sentence ' F_1 ' expresses two facts one of which necessarily implies the other". And in this sense whenever we say of a fact such as *This adjoins that* that it is necessary we shall be speaking not nonsensically but falsely. On the other hand when we say that the fact *This adjoins that* is contingent we mean that it is not necessary. Thus we speak not nonsensically but truly.

What Broad has in mind is (1) that if 'B' is a proper name then *ARB* is atomic; (2) that "*ARB* is atomic and necessary" is self-contradictory in view of the meanings of 'necessary' and the fact that 'atomic' implies non-conjunctive; (3) that for similar reasons "*ARB* is atomic and contingent" is redundant; (4) that if 'B' means 'The thing which has ψ ' then the first statement is not self-contradictory and the second not redundant.

¹ There is a difference here. The proposition *Something applies to this* or *This is a constituent of the world* cannot be false. No such proposition can be false because if I can make such a proposition then it is true. But each such proposition is contingent in the sense that it is not self-contradictory to suppose that the world should have lacked the materials (namely *This*) for the making of this proposition. See *Logical Constructions*, January, 1933, p. 61, footnote 3.

All this is true. But 'self-contradictory' and 'redundant' are not the same as 'nonsense'. And 'B' should be a descriptive phrase, not because a variable is needed for necessity, but because more than one fact is needed and ψ provides the component for the other fact.

II. BROAD ON McTAGGART. (i) *Reality and Existence*.—Although McTaggart says that reality is an indefinable quality he also says "Since I first wrote this section I have had the pleasure of finding myself in agreement on this question with Mr. Russell: 'Such a proposition as ' x is unreal' only has meaning when ' x ' is a description which describes nothing', *Introduction to Mathematical Philosophy*, p. 170".¹

It is made clear how negligible is that sense of 'exists' in which McTaggart finally asserts that everything which is real exists.

(ii) *Content*.—Broad defines this conception in terms of the intersection of groups of particulars. (Broad uses 'particular' where McTaggart would use 'substance'.) It might be suggested that content is a fundamental notion for McTaggart, comparable to the Substantival Absolute Space of which Broad speaks. Then substances, in the non-fundamental sense of things, would be reducible to sets of states each of which consisted in the pervading of some bit of content by some quality. Two different things or different groups would have the same content on this interpretation if the set of states to which the one was reducible involved the same bit of content as did the set of states to which the other was reducible—each would be a different selection from the total pervadings of that bit of content.

(iii) *The Dissimilarity of the Diverse*.—This is the first of McTaggart's two ultimate *à priori* premisses and may be stated as follows: Any two particulars must be unlike, either in their qualities or in their relations, in a way which is not an analytic consequence of the fact that they are two. This doctrine Broad rejects on the ground that there might have been two simultaneous noises having no spatial relations, and of precisely the same pitch, loudness and tone-quality, and two bodiless minds alone and contemplating at exactly the same rate and in exactly the same order Lindemann's proof that π is a transcendental number (pp. 174, 176). He believes that the Dissimilarity of the Diverse has seemed plausible because people have (a) confined their attention to physical things and events and forgotten about sensibilia, experiences and minds, and (b) assumed a single spatio-temporal system.

(iv) *The Principle of Sufficient Descriptions*.—"An 'Exclusive Description' of a term is a characteristic which belongs to it and to no other term. . . . If an exclusive description refers to no merely designated particulars, but consists wholly of universals, it is called a 'Sufficient Description'. Thus it would be a sufficient description

¹ *Nature of Existence*, vol. i. (hereafter *N. of E.*, I.), pp. 286-288.

of Christ, on the Christian view of his nature, to say that he is the son of the Most Perfect Being.

"If the Dissimilarity of the Diverse be admitted it would follow at once that every particular must have an *exclusive* description. . . . If there be other particulars besides A, none of them can be exactly like A. So a complete description of A would necessarily be an exclusive description of it. And, of course, a selection from the complete description of A might be an exclusive description of it. . . . McTaggart professes to show that, if every particular has an exclusive description, every particular must have a sufficient description" (pp. 178, 179).

Broad points out that if A is jealous of B on account of C, B of C on account of A, and C of A on account of B, and the universe consists of these three, then each has an exclusive description whether or no it has a sufficient description. It follows that something is wrong with McTaggart's proof of the principle on which his whole system depends.

McTaggart argues as follows: If possible, suppose that A has an exclusive description but no sufficient description. The exclusive description which is not sufficient will be of the form *has R to B*. The possibility of such a description depends upon the existence of B. By the Dissimilarity of the Diverse B must have an exclusive description. On the present hypothesis this cannot be a sufficient description for then A would have a sufficient description *the thing which has R to the thing which has ϕ* , where ϕ is the sufficient description of B. Therefore B's exclusive description must be of the form *has S to C*. "And this depends on the existence of C, and this on its dissimilarity to all other substances, and so on. If this series is infinite it is vicious. . . . And if the series is not infinite A has a sufficient description".¹

Broad states this argument simply but carefully and points out: (a) that the series need not start unless it is assumed that B must be other than A; (b) that the series need not be infinite unless it is assumed that C must be other than A; (c) that the series even if infinite would not be vicious.

Many people would say that A must be other than B because no term can have a relation to itself. However that may be (b) and (c) suffice for Broad's conclusion that "the principle of Sufficient Descriptions is nothing but a fallacious inference from a doubtful premiss."

(v) *The Endless Divisibility of Particulars*.—McTaggart's second *a priori* ultimate premiss is that every particular is a collection of particulars. It would follow that every particular has parts within parts without end. This premiss is fully explained and considered in chap. xix.

This premiss Broad does not deny but he does not find it self-evident and in consequence doubts its truth.

¹ *N. of E.*, vol. i., p. 108.

(vi) *Every Particular Possesses a Description which Entails Sufficient Descriptions of all its Parts.*—Broad begins his discussion of this important proposition in McTaggart's system by defining what he calls a Series of Sets of Parts of a particular, P. "Let 'P_1 and 'P_2 be two parts which exactly make up P without overlapping each other. We will call the group $\text{'P}_1 \cdot \text{'P}_2$ a 'First-order Set of Parts of P'. There will, of course, be innumerable other sets of two parts of P which will equally be first-order sets of parts of P, e.g., $\text{'P}_1 \cdot \text{'P}_2$.

"Now 'P_1 and 'P_2 will themselves be particulars. Each will therefore have parts. Let 'P_{11} and 'P_{12} be a first-order set of parts of 'P_1 . And let 'P_{21} and 'P_{22} be a first-order set of parts of 'P_2 . Then the group $\text{'P}_{11} \cdot \text{'P}_{12} \cdot \text{'P}_{21} \cdot \text{'P}_{22}$ will be a set of parts of P. We will call it a 'Second-order Set of Parts of P' and we will say that it is immediately subsequent to the group $\text{'P}_1 \cdot \text{'P}_2$. There will, of course, be innumerable second-order sets of parts of P which are immediately subsequent to $\text{'P}_1 \cdot \text{'P}_2$. And there will be innumerable other second-order sets of parts of P which are not subsequent to $\text{'P}_1 \cdot \text{'P}_2$, but are immediately subsequent to one of the innumerable other first-order sets of parts of P. Let us now consider any one series of sequent sets of parts of P. . . . We will call any such series a 'Series of Sets of Parts of P'" (p. 358). I gather that Broad is not going to say that a set of parts β is sequent to a set α unless both (i) no part of a member of α is neither a member of β nor a part of a member of β , and (ii) any member of β is part of one member of α . This is not McTaggart's definition of 'sequent'. For his definition does not require that *each* part in α should be split in β —"If B and C formed the first set, the second set might be D, E and C, where D and E were a set of parts of B".¹

If every particular has a sufficient description every part in a series of sets of parts of P has a sufficient description. Now some of these descriptions may supply (to use McTaggart's word) others. A sufficient description C_1 of P_1 supplies a sufficient description C_2 of P_2 provided that *Something has C_1 entails Something has C_2* —it is not necessary that it should entail that P_2 has C_2 . Thus suppose P_1 is the oldest man and P_2 his only wife then P_2 has a sufficient description supplied by the nature of P_1 , namely *wife of the oldest man*. Sometimes a thing is sufficiently described by sufficiently describing a set of its parts; for example, a society might be sufficiently described as the society the members of which are the oldest man, the wisest man and the best man. A thing so described is said to be *described by reference to its successors* (p. 359).

These preliminaries settled, Broad next considers McTaggart's proof of an important theorem which is divided into two propositions the second of which includes the first with a qualification added. (i) Every series of sets of parts of a particular must contain a term such that the members of this term have sufficient descriptions which

¹ *N. of E.*, I., p. 191.

supply sufficient descriptions of all the members of all subsequent terms in the series. (ii) The mode of supply must not be merely analytic (p. 360). *Contains the smallest wheel* supplies the *smallest wheel*; but this supplying is analytic.

(a) According to Broad McTaggart proves (i) from the proposition, "In any series of sets of parts of a particular P there must be some term ' P_n ' such that its members, and the members of all terms which are subsequent to it in the series, are sufficiently describable without reference to their successors". McTaggart's language¹ is indefinite but it may be interpreted to express only the milder proposition "Below any set of parts of P there must be another the members of which are not described by reference to their successors". This follows from his premisses and would suffice for his conclusion if the remainder of his argument were sound.

(b) There is no doubt about the gross logical fallacy which Broad points out on page 363.

(c) It would be foolish to spend further time over this argument, because, as Broad should have explained, it is superfluous in view of a much simpler argument which McTaggart uses.²

(d) McTaggart's argument for his proposition (i) based upon the Principle of Total Ultimate Presupposition (p. 205) is not identical with the argument Broad states. It is, however, fallacious, involving (1) the assumption that every set of parts has only one sufficient description, and (2) the principle of total ultimate presupposition which, for reasons analogous to those mentioned below in the discussion of minimum adequate description, does not hold when the number of elements in a presupposition is infinite. And it also is superfluous in view of the simpler argument which may now be introduced.

McTaggart has argued: Part of the nature of a particular, P, namely its particularity, entails that some or other infinite hierarchy of descriptions applies to the parts of P and *à fortiori* to something, while it does not entail what those descriptions are. From this it follows that the whole nature of P either (a) does only the same or (b) *also* entails what those descriptions are. After trying to prove (b) by a complicated and, as we have seen, fallacious disproof of (a) McTaggart obtains what he wants in one paragraph: If P_n is any part of P and has a sufficient description C_n then P has the character *contains a part which has C_n* and this fact about P entails not merely that some sufficient description applies to something but that C_n does. Therefore the nature of P supplies sufficient descriptions of a series of sets of parts of P because it includes the fact that P has parts described by $C_1 \dots C_n$, where these are the descriptions which the parts of P in fact possess.

The only question which remains is *Does the nature of P supply descriptions of its parts only inclusively, i.e., analytically, or also non-*

¹ N. of E., I., p. 198.

² N. of E., I., p. 202.

inclusively? McTaggart seeks to prove the second alternative which is the same as the proposition which Broad calls proposition (ii).

McTaggart's proof of (ii) is as follows: Any description of P adequate for supplying sufficient descriptions of the parts of P either itself has no superfluous elements or contains a description which is adequate and without a superfluous element. (The principle of Minimum Adequate Description.)¹ Now consider any description which supplies-by-including sufficient descriptions of the parts of P—it will be of the form (1) *contains a set of parts such that one has C_1 and the other C_2* and (2) *contains a set of parts such that one has C_{11} , one C_{12} , one C_{21} and one C_{22}* and (3) *etc.*, where the C's are sufficient descriptions and the series has no end. The first element in such a description is superfluous if the second element is retained. For the first set of parts in the series, which it sufficiently describes by C_1 and C_2 , is also sufficiently described as a set of parts one member of which has a set of parts the members of which are sufficiently described by C_{11} and C_{12} respectively and the other member of which has a set of parts sufficiently described by C_{21} and C_{22} respectively. Similarly the second element of the description is superfluous if the third is retained and the third if the fourth. Indeed below every element is another which renders it superfluous. Therefore a description which supplies inclusively sufficient descriptions of the parts of P will neither be a minimum adequate description nor contain one. Hence "of the two ways in which the nature of [P] could supply the sufficient descriptions of its parts we have now seen that inclusion without implication would involve a contradiction. We have therefore no hope left but in implication."²

Broad points out that this argument proves too much because if the parts of P have sufficient descriptions then P *will* have the character of having a hierarchy of parts described by that hierarchy of descriptions and this fact about P certainly *does* supply those descriptions. McTaggart slurs over this difficulty by stating his final conclusion without stating the intermediate conclusion that P cannot have a description which supplies inclusively sufficient descriptions of its parts.³

Broad concludes that "we ought either to reject the principle [of Minimum Adequate Description] which McTaggart assumes as a self-evident premiss in his argument, or to conclude that there is no such characteristic as the argument professes to be about" (p. 367). But the argument does not profess to be about a characteristic except in the sense of compound characteristic; and it is certain that P possesses such a compound characteristic or description. No—at this point Broad should have explained and removed the temptation to accept McTaggart's principle. The temp-

¹ Compare the *Principle of Total Ultimate Presupposition*, p. 205.

² *N. of E.*, I., p. 204.

³ The argument also proves too much in that it would remove the sole good ground for believing that the nature of P supplies sufficient descriptions of the parts of P.

tation is explained when it is shown that the principle can be proved for descriptions with a finite number of elements, and removed when it is noticed that the proof fails for descriptions with an infinite number of elements. The proof is as follows:

Any description D_n adequate for supplying sufficient descriptions of the parts of P is either (1) itself minimum, *i.e.*, without a superfluous element or (2) contains a superfluous element. If (1) then D_n is itself a minimum adequate description. If (2) remove the superfluous element and the remaining $n - 1$ elements of D will form a description D_{n-1} which is adequate. D_{n-1} either (1) contains a superfluous element or (2) does not. If (1) then D_{n-1} is a minimum adequate description; if (2) remove the superfluous element and then etc. Now if D_n contains a finite number of elements then successive reductions of one will bring us to a remainder of D_n , $D_{n-(n-1)}$, which contains no elements.¹ Unless D_n or $D_{n-1} \dots$ or $D_{n-(n-2)}$ contains no superfluous element $D_{n-(n-1)}$ is adequate. But $D_{n-(n-1)}$ contains no elements and therefore no superfluous element. Therefore unless D_n or $D_{n-1} \dots$ or $D_{n-(n-2)}$ is a minimum adequate description for supplying sufficient descriptions of the parts of P , $D_{n-(n-1)}$ is such a description.

But if n is infinite the italicised premiss is false.²

(vi) *McTaggart's Supplementary Argument*.—McTaggart further argues³ that unless part of the nature of P entails without including sufficient descriptions of its parts there will be an infinite number of "ultimate concurrences" between these sufficient descriptions and exclusive but not sufficient descriptions which the parts possess in virtue of their position in a series—such descriptions as being a member of a particular set of P 's parts or being a part of some particular member of the precedent set. Such an infinite number of ultimate concurrences McTaggart considers incredible.

Broad objects: (α) That the argument assumes that in any series of sets of parts of P there must be a term such that its members and the members of all subsequent terms are sufficiently describable without reference to their successors. I have commented on this above. (β) That the argument is useless unless McTaggart's theory of entailment without inclusion has an antecedent probability which is greater than some assigned finite number. But then surely somehow it has. (γ) That entailment without inclusion may not be the only alternative to the ultimate concurrences. But careful definition will show that it is.⁴ (δ) That we cannot be sure that the ultimate concurrences are incredible. I should go further and say that we can be sure that

¹ See Russell on "Positive Theory of Infinity" in *Our Knowledge of the External World*, p. 197.

² I have stated this in other words in "McTaggart's Determining Correspondence," *MIND*, XXXVII., N.S., No. 148.

³ *N. of E.*, I., Sections 190 and 193.

⁴ John Wisdom, *op. cit.*, p. 427, l. 3.

they are not incredible. In any case, as Broad says, the argument assumes that every particular has a sufficient description and is endlessly divisible.

(vii) *Determining Correspondence*.—McTaggart believes that the nature of a particular can supply non-inclusively sufficient descriptions for the infinite hierarchies of its parts only if a certain kind of relation holds among those parts. The theory that this kind of relation holds is the theory of Determining Correspondence. Broad excels even himself in exactly stating and lucidly explaining the definition of this sort of relation. I shall not attempt to summarise Broad's account, but it may prove useful to neglect certain complications and give a preliminary idea of what McTaggart has in mind.

Let Σ be an infinite series of sets of parts 1 of P and α the first of these. Suppose a relation R such that taking any two successive sets of parts in Σ , σ_1 and σ_2 , then they are related by R as follows: σ_2 is exhaustively divided into subsets such that no two members of the same subset are parts of the same member of α and such that for each subset there is a different member of σ_1 which has the converse of R only 2 to each member of that subset. Then provided the members of α have sufficient descriptions R is a relation of determining correspondence for P . It is easy to see how the descriptions are supplied. Any two members of σ_n which are in the same subset are distinguished as parts of different members of α ; any two members not in the same subset are distinguished by having R to different members of the precedent set.

Broad shows (p. 375) how sufficient descriptions may be non-inclusively supplied without a relation of determining correspondence.³

In the last chapter the bearing of the theory of determining correspondence on the unity of the universe is discussed and the conception of a self-reflecting unity explained. Finally there is a retrospect which reveals the orderliness of the thinking which has brought us to the conclusion that the theory of determining correspondence is utterly unproved.

Certain confusions and omissions in this book I have tried to exhibit; I want now to say that I very much admire it. Sympathetic and very lucid exposition have been powerfully combined with very trenchant criticism. The independent discussions are of great interest and cause one to look forward to Broad's second volume.

JOHN WISDOM.

¹ In Broad's sense. This guarantees the required splitting to infinity of the parts of P . This is also guaranteed by my definition (*op. cit.*, p. 419) provided R is assumed alio-relative.

² "To no other parts of members of α " is enough.

³ In his review in *MIND* of the *N. of E.*, I., Broad stated another method for supplying the descriptions. This and yet another method are explained in my article (*op. cit.*, pp. 420, 421).

The Physical Mechanism of the Human Mind. By A. C. DOUGLAS. Edinburgh, E. & S. Livingstone, 1932. Pp. xiv + 251. 15s.

It is quite clear that there must be a difference of temperament between philosophers, which makes some take 'the body' for granted and suspect 'the mind', while to others mental life is so obvious that they may even doubt the existence of the body altogether, or, at any rate, emphasise the fact that we only know it by inference from changes occurring in 'the mind'.

Mr. Douglas belongs to the former class. He comes forward to raise psychology to the status of a science by urging it to abdicate in favour of physiology. The result is that we see how dependent his physiology is on his knowledge of the other subject. His argument throughout, with very few exceptions, is from psychology to physiology and not the other way about. He examines the way in which human beings behave, and inquires what goes on in their minds, and then invents a scheme to fit in with his discoveries in terms of chronaxies and inhibitions. This is, indeed, the only thing he can do; his physiology must agree with his psychology. If he said, for instance, that there were no nerves running from the optic sector to the auditory sector, and that therefore we could not be reminded of a sound by a sight, he would obviously be wrong. In this he is in the same position as the physicist with his electrons and protons; he must invent a scheme which is not contradicted by conscious experience. It should further be noticed that almost all Mr. Douglas's account is in terms of physiological concepts, so that he spends most of his time in the region of sense-data, or, rather, of hypothetical sense-data.

Now so little is known about the working of the nervous system in the brain of a living and thinking man, that Mr. Douglas has a wide field over which his creative imagination may range. The result is that it is difficult to decide what we require of him. He must not invent anything which is incompatible with known facts about the mechanism of the body, but, as that comprises very little, it need not trouble him very much. What is likely to get in his way is the paucity of physiological concepts which he has at his disposal. But on what principles can we state our demands? He will not conflict with experience, because he starts with it, and lays down the principle that 'behind' or 'along-side of' every mental happening is a physiological one, *of some sort*. He does not leave it at that; he is going to tell us of what sort, and if that is his purpose, we must not be able to find anything that human beings do, which is not readily translatable into his physiological terms. There is another requirement, too. If I can contemplate, doubt, believe, or deny a proposition, must I not expect the physiologist to tell me what specific physiological happening, or what sort of physiological happening, lies 'behind' each of these different experiences, marking their qualitative differences?

Let us consider his scheme. The nerves, their structure and variety, their topography and function (as afferent or efferent, belonging to the autonomic or to the central nervous system) are ascertainable by observation and experiment.

The sensory-motor system, when stimulated in various different ways, responds with corresponding variety; the child sucks the warm milk and yells at the hot. This means that there must be a variety of molecular constitution in the afferent nerves. Water responds in a specific way because of its peculiar molecular constitution, and the same must be true of nerves, or, at the very least, "variations in the exciting force give rise to variations in the molecular adjustments" (p. 26). Dr. Adrian, in his 'Basis of Sensation,' is cautious on the subject. "There is no specific activity in the sensory nerves", he writes, "corresponding to each type of sense-organ. The fibres from the various receptors may differ somewhat in their time relations, but the fundamental activity, the nervous impulse, is common to all, and is common also to the motor nerve fibre." If we are to assume that there is correspondence between seeing and the stimulation of the optic nerves, and hearing and the stimulation of the auditory nerves, we shall have to suppose something of the kind suggested by Mr. Douglas. The only difficulty is that there is but little evidence to support it.

What of the motor paths? Mr. Douglas generalises Lapicque's hypothesis of 'Chronaxy' to cover the whole of the nervous system, providing himself with a basis of selective differentiation. Every motor nerve has its own 'chronaxy', or threshold, which is conveniently alterable. If a nerve is linked up with another nerve, which has approximately the same chronaxy, an impulse along the first will pass over to the second, but if the second nerve is 'heterochronous' to the first, then, for an impulse to pass over, there must be repeated stimulation of the first, or the intensity of the stimulus must be increased. Incidentally, it is not easy to see how this squares with the 'all or none' principle. But supposing two sensory nerves, O and S, are linked up with the same motor nerves, B, C, and D, then "stimuli coming from O may be so modifying the reactionary potentialities of B, C, D (perhaps without being of sufficient intensity to actuate the muscles), that impulses from S are unable to pass the synapse" (p. 32). These are his tools: varied afferent impulses, alterable chronaxies, the mechanism of inhibition, and the further principle that when an impulse has passed several times from a nerve to one heterochronous to it, "the chronaxy of the second neurone" is "specifically modified by the action of that particular stimulus" (p. 37).

With this material he gives a brilliant sketch of the development of the nervous system. The vegetable side of life is the dominating feature. The condition of the motor apparatus of the central nervous system is determined by the state of affairs in the autonomic region; this latter provides a constant back-ground on which overt

behaviour plays its part. An admirable account of the experimental evidence for neural integration is given, and he builds up the concept of a second back-ground of posture dominating the individual movements of skeletal muscle.

Having mapped out his structure, he proceeds to its working. Where several stimuli compete, as in the case of a dog trying to find an object hidden by its master, one or other will permanently or temporarily assume dominance, while the sub-dominant stimuli will act as modifying influences. There will thus be a total integrated hierarchic response-pattern, the organisation of which is, presumably, determined by chronactic factors, and these physical reactions are accompanied "so far as their cortical part is concerned, by a concomitant flux of conscious sensation" (p. 84).

Attention is defined as: "a reflex muscular reaction to the dominant stimulus, the mechanism of which is directed to the most effective receipt of that stimulus," while interest "is merely a measure of the capacity of the incoming reaction to arouse the attention-reflex" (p. 88).

Recognition is simple, it is a "modification of the original sensation due to the previous sensitisation of the nerve-path by the particular stimulus in question" (p. 91). The worst of this is that it gives us at once too much and too little. We certainly are aware of movements, but do we recognise a reperformed movement in any sense which is analogous to our recognition of sense-data? We certainly ought to, since the paths have been sensitised before. So far as this goes we ought to recognise more than we do, but Mr. Douglas does not allow us to recognise as much as we do. If I hear a piece of music played on a piano, and then hear it played in a different key by a barrel-organ, I can recognise it and pick it out from the arabesques of sound which accompany it when performed on that particular instrument, although it is not sensitising previously sensitised paths.

"Frustration, disappointment or even anger are different degrees of the sensation which arises from the response when the appropriate muscular action is impossible" (p. 92). (We may question, in passing, whether anger is a degree of disappointment.) This is important because inhibition and its absence seem to lie 'behind' a great many different experiences. *Consideration* of a proposition occurs when the stimulus is too weak to lead to innervation of motor nerves, or when there is an inhibition of those motor nerves, *belief* corresponds to an absence of competition with respect to a particular mode of action, *doubt* corresponds to a struggle between one motor path and another, while *denial* presumably corresponds to another condition of tension. The question is whether the qualitative variety in all these states of mind finds sufficient correspondence in the varieties of intensity, extensity and topography of neural impulse and inhibition.

The stage is now set for understanding how it is that the child who has once tasted orange-juice reaches out its hand in an interested

and attentive fashion towards the re-presented orange. The chronaxies are modified, the impulse from the orange passes over into the previously sensitised tracts; "the child may lick his lips . . . he may perform movements with his mouth and tongue, with his swallowing muscles, or even clutching movements with his little fingers" (p. 94). The problem for the observer is this: does the child always perform exactly the same reactions as before? From the point of view of physiology, a generally similar purposive response is nonsense; precisely the same motions must be performed on the second occasion as were performed on the first; chronactic barriers stand in the way of any others. But there is the afferent side of the business, too. What if the orange be slightly different in shape or colour from the first? Mr. Douglas is prepared for us. The bleat of a lamb, he tells us, is not always the same, but nevertheless we are able to recognise a lamb by its bleat. There are, he suggests, multipolar cells interpolated between the afferent and efferent sectors with intermediate chronaxies. If stimulus X excites a motor response A, it must be admitted that Y need not excite A, unless there is a passage from Y to A, and so he interposes a cell between X and A, and connected with Y with a chronaxy somewhere between X and Y, and sufficiently similar to be within the range of excitation of both of them. This is ingenious, but will it carry the great weight of variety of stimulus to which I respond in the same way? I can utter the name of a person when I see his photograph in the newspaper. If I saw him in the flesh, but in a different suit of clothes, and looking rather ill, there might be a stimulus sufficiently like the original stimulus for it to excite the same multipolar cells as were excited by that original stimulus, which would lead to my vocalising his name (of course in precisely the same tone of voice as I used on the previous occasion). The question is: can we admit that the stimuli from the photograph are sufficiently similar to the stimuli from the living man to produce the same effect?

So far we have been dealing with the untutored responses of children. Experience leaves its traces, inhibition of one path by a competing path leads to organisation, conditioned reflexes lead to new connections, and the parts of activity-patterns are ordered in time by their position *vis-à-vis* the general organic background. We can now face the situation of an adult monkey in the presence of a bunch of bananas on a tree. His visual perceptions are aroused, but they have been aroused before and so the bananas are recognised. He has also plucked bananas before, so that they are *known* to be accessible by such and such means. It seems that knowledge is a kind of aura of past innervations re-excited, the psychic equivalents of which may be 'unconscious'. The physiological difference between roving in imagination over the past acquisitions and knowing that bananas may be acquired by certain means is obscure. Surely 'I remember climbing a tree and getting certain bananas' is one thing, and 'I know that bananas can be got by climbing a tree in

such and such a way because I've tried' is another. In both cases we have a re-excitation of previously sensitised paths. What is physiologically peculiar about the one which does not apply to the other?

But let us complicate the situation. If our monkey has once fallen from a tree, and remembers it, there will be an element of *doubt* in his state of mind—"the physical basis of this doubt being the simultaneous stimulation of two rival perception patterns, the dominant reactions of which are, as it were, struggling for the possession of the motor path to the muscles" (p. 197). There follows an "interplay of cortical currents with mutually augmentary or inhibitory effects" (p. 199), which is the physiological basis of *reason*. Now suppose the situation to be further changed by the appearance of a snake near the tree. The climbing impulse will be inhibited because of past experience. "But the stimulation of perception patterns constituting the monkey's knowledge of snakes may result in the emergence of the idea that the snake may move away" (p. 200). The monkey hangs on, because: 'If I wait the snake may go away, and the coast will be clear'. Physiologically the situation is simplified into this: perception of bananas, A, evokes motor response, X, and perception of snake, B, evokes response, Y, which inhibits X. But B also evokes memory P of a snake departing, and P now modifies Y, causing the monkey not to run away but to wait. The difficulty is to see exactly how this comes about. B is chronactically connected with Y; but on what grounds can we suppose that P is in chronactic harmony with Y at all? This is a simple instance in which past experience is applied to a situation which differs in many salient respects from any situation in the past, and that is nine-tenths of what is meant by 'seeing the point of' or 'understanding' a situation. Can a physical machine be built up to cope with this kind of thing? I doubt it, because in a physical machine the connections are fixed, while in 'understanding' connections are 'seen to exist' which have not previously been sensitised. The whole point of understanding is the seeing of familiar relations in unfamiliar surroundings; the only relations which can figure in Mr. Douglas's physiology are between chronaxies rendered 'isochronous' by previous stimulation on the part of specific relata.

When trains of activity become longer, Mr. Douglas physiologises Ach's 'determinierende Tendenz', which inhibits irrelevances in the service of the dominating impulse or the 'end in view'. This, of course, is intended to account for the coherence and relevance of practical thinking. But sometimes thought may be uncontrolled, and "set in action by stimuli invested with no such biological significance, the reactions are free to roam, as it were, throughout the cortical network". "To such free associations . . . we owe the results of creative imagination—the folk-lore, the legends, and the mythologies of the various races of mankind, our art, our poetry, our fictional literature, and many of those outstanding results of

inventive thought which mark the progress of civilisation" (p. 206). Mr. Douglas would seem to be a 'Surréaliste' where art is concerned, and we doubt whether inventors and writers of highly organised detective stories will be prepared to accept his analysis. In any case imagination cannot be passed over as lightly as this. Mr. Douglas assumes that an image of a cat or an apple tree has behind it simply the resensitisation of previously sensitised tracts. He forgets that no image is composite in the sense of being made up of familiar bits; it is a new organisation. When I have a visual image of a red cat, I do not have an image of a cat and a red patch, though this is a possible image for me to have, I have an image of a cat coloured red. How, physiologically speaking, does the red obtain access to the cat, and what happens to its original colour?

If practical thought could be dealt with in the way Mr. Douglas suggests, what about non-practical thought? Knowledge is 'stored' and tabulated under "various sensory headings, each compartment connected by laws of association with all the others, and this knowledge is so arranged and classified that incoming stimuli find it available for reference under headings and sub-headings" (p. 192). To this there is a footnote to the effect that: "The logician will recognise the mechanism of the syllogism." But the objection that the logician is likely to make is that he can construct a valid syllogism with false premises. There is no account whatever given of the 'feeling of validity'. This brings us to the problem of the philosophical status of Mr. Douglas's book. Suppose the 'end in view' in writing it to be the alteration of other people's nervous systems, his fingers have been set in motion and have produced a series of marks determined by the conditioned reflexes involved in writing. A different nervous system would have produced a different series, possibly contradicting that produced by Mr. Douglas. What is meant by saying that both could not be true? As it stands, one is no more true than another. Truth is mentioned by Mr. Douglas in connection with practical affairs; if the monkey acts on certain perceptual assumptions and finds that he does not get the bananas, he "concludes that his belief was misplaced . . . that his prognostications were not in accordance with the *truth*" (p. 197). Mr. Douglas rests all his theory of intellection on a strictly practical basis, and so we may conclude, on analogy, that if he does not alter other people's nervous systems in the way he wants to, his views must be false, and we might add that on these lines a less carefully thought-out book might have made them truer.

So far, the objections to Mr. Douglas's thesis are as follows: (1) The variety of possible combinations is insufficient to correspond to the qualitative variety of states of mind. (2) The fixity of physiological connection does not correspond to the 'fluidity' of understanding, variety of response to the same situation, and similarity of response to different situations. (3) The practicality of physiological connection does not fit in with (a) the organised patterns of

imagination, (b) the perception of logical relations. (4) Unconscious sensations seem rather out of place in a work of this kind, but it must be admitted that *if* cortical sensitisation is always attended by sensation, when sensations are not conscious, they must be unconscious—there is no alternative. (5) It is quite obvious that Mr. Douglas really thinks that what he says is true, whereas all he has the right to say is that his book is of the nature of a prose poem.

With regard to the first three objections, the critic may well feel embarrassed if he is asked what alternative he can suggest. It is here that we are in sympathy with Mr. Douglas in his feeling that psychology is in an uncomfortable position. 'The Mind' is brought in to fill the gaps. The mind is the instrument which 'understands', 'sees relations' and 'has' this variety of states, or, perhaps, 'consists' of them, but when the question is asked: 'what is the mind?' the answer will depend on the temperament of the person to whom the question is addressed. If he is the sort of person who takes the mind for granted, he will regard the question as a silly one. If he is not prepared to grant any reality to anything that does not affect his sense-organs he also thinks the question a silly one, but he is in rather a weaker position. If he is prepared to grant precedence to the evidence of his senses, then 'the mind' is brought in to 'do' what the body cannot. Many of us try to gloss over the difficulty by talking about a 'body-mind', or a 'psycho-physical organism', but it is doubtful whether that makes our position more respectable. But however distressing the position of psychology may be when one probes into its fundamental concepts, the co-ordination of our knowledge of human behaviour proceeds apace, with its array of dynamic schemata of instincts, hormic urges, unconscious processes and the like, and it is not really good advice to give the psycho-analysts to tell them that they can "serve a useful purpose by tracing the establishment of sensitised cortical circuits in the individual patients" (p. 143). Whatever chronactic values may have been established in the brain of Mr. Douglas to cause his rejection-reaction to 'mythical' entities like the 'super-ego' and the 'censor', it cannot be denied that psycho-analysis has contributed more to the knowledge of human behaviour than physiology has. One might well retort that the psycho-analytic theory of unconscious motivation might give him as much help in his construction of mythical nerve connections as has been afforded by his knowledge of what goes on in people's conscious minds.

Mr. Douglas has certainly met a great many of the stock objections against mechanistic theories, but he has mentioned one curiosity, with which he has not dealt in sufficient detail, and has omitted another, which he may, perhaps, class with such non-entities as telepathy and personal survival.

He boldly calls attention to Lashley's experiments on rats, and admits that, since it does not matter *what* part of the cortex is left so long as there is enough, "trans-cortical fibres transmit reactions

indifferently" (p. 75). This gives us an odd picture of a physical machine, and, where determinism is insisted on, we ought to be told what determines the paths actually taken in this indifferent medium.

The unmentioned phenomenon is that of 'transference of training'. If doing one thing helps us to do another, how is this expressed physiologically? Why do the chronactic changes involved in learning classics modify the chronaxies involved in fulfilling the functions of a civil servant? Or does Mr. Douglas not believe this to occur? The evidence is not so negligible as to warrant its omission.

Whatever one may feel about the truth of Mr. Douglas's theory, his book is good. The account of the nervous system, the brain, reflex action, and reflex inhibition are admirable, and accompanied by excellent diagrams. The train of thought, too, is so careful that he raises problems which many writers on physiological-psychology leave out. It is a worthy challenge to psychologists to set their foundations in order.

W. J. H. SPROTT.

Music and its Lovers: An empirical study of emotional and imaginative responses to music. By VERNON LEE, Litt.D. London: George Allen & Unwin, Ltd., 1932. Pp. 589. 18s. net.

To the reviewer, who is also a teacher of philosophy committed to a good many odd jobs, who finds himself panting in the attempt to keep the rearguard of modern intellectual progress at least in sight, this latest book of Vernon Lee's has sometimes seemed bewildering and complicated. It is crammed full of accounts of musical experience, of questions, answers, of bits of psychological, bits of philosophical, hypothesis, which bewilder, fatigue and charm. In reading it, my feelings have been mixed; I have wished, on the one hand, for greater continuity of argument; and on the other hand I have been captivated by the colourful description of a thousand different experiences, and by the spontaneity and beauty of the presentation. The work calls out for condensation, and yet if it were condensed a good deal of its life and purpose would have gone.

These perplexities are part of another. For what class of reader is this book intended? Not, says the author (p. 13), for Musicians or Musical Critics. And not for the intelligent Amateur. For whom then? For Psychologists and Philosophers?

The author's view is, pretty plainly, that it is for Psychologists, that it is a book of psychology, or of "aesthetics as a branch of psychology" or of "aesthetics as an introduction, a *Vorschule*, to psychology". The kind of psychology she has in mind is the Ribot sort, and not that inspired by Vienna or by American behaviourism. Yet if the book is unquestionably the work of a keen and able

psychologist and contains a large number of interesting, and sometimes brilliant, psychological suggestions (*e.g.*, about 'ancestors of emotion', 'affective memory' (after Ribot), schemata of movement, and the like), it is much more a body of *material* for the psychologist to get to work upon. The author when she gets to theorising, seems sometimes to suffer from a guilty conscience, hurrying on as if she hopes no one will notice.

But if it is a body of material (*plus* some theory) for the psychologists, it is also a body of material (plus some theory) for the philosophers, and as such I propose to accept the proffered gift. I happen to believe that psychological aesthetics is only a part—an important part—of aesthetics proper, and that aesthetics proper is a truly philosophical study. I do not know whether Vernon Lee would admit this, but I rather fancy she would not, labelling philosophy as she does (in common with so many others) as "*a priori* philosophy", and then dismissing it. Nevertheless, the empirical data she offers, the theories she suggests, and some of the conclusions at which she arrives (*e.g.*, on the separation of *Le Bien*, *Le Beau*, *et Le Vrai*, or on the intellectual futility of disputing about tastes) are nothing if not philosophical in the issues they raise. Any philosopher who is thinking of writing a work on *Æsthetics* will find this one full of good meat, but meat that needs much stewing in its own juice. But because the stewing would for me take longer than it would be fair to delay the review of a book published in 1932 (though received much later), my review will be shortish, and I fear inadequate to the book's interest.

What is it all about? The general question at the basis of the enquiry seems to be the important one, Does music express human emotions or feelings? Has it (in one way or another) a 'message', or is it "just music", *sui generis*, expressive of nothing but 'musical' feeling, utterly untranslatable, and incomparable with the rest of human experience? The Author's answer to this question is, however, no simple 'yes' or 'no'. She discovers it, if at all, through an enormous variety of answers to several questionnaires. A number of these were made out at different times covering a considerable period of the Author's life (see pp. 15 *sq.*). Just before the war the work was so far advanced that the answers of about one hundred and fifty persons had been collated, and an introductory memorandum published (reproduced in the first chapter of this book) with the collaboration of Irene Cooper Willis. After the war the subject-matter was with some difficulty worked over and much elaborated, this time by Vernon Lee alone, and was supplemented by a 'Collective Experiment' in which a number of Answerers gave their various impressions of the same piece of music. To understand the implications of these modifications and enlargements, one must study the book itself: I mention some of them only to suggest the really prodigious labour and time which has gone to the making of some 560 odd pages.

The general underlying problem has been stated. The final English Questionnaire—demanding seventy or so answers, most of them capable of indefinite individual elaboration—investigates such data as the musical qualifications of the subject, his (or her) memory and emotions, whether music is for him (or her) dramatic, 'representative' and suggestive, or "just music"; its 'moral' effects or otherwise, the preference for different composers, the effects of words and titles, the variation of musical moods from day to day.

A fundamental distinction at the outset is that between 'Listeners' and 'Hearers'. 'Listening' implies "active attention moving along every detail of composition and performance, taking in all the relations of sequences and combinations of sounds as regards pitch, intervals, modulations, rhythms and intensities" etc., etc. (p. 31). The 'Hearer' is passive; the music is only one element of content of the Hearer's wandering imagination, the "musical shapes are like islands continually washed over by a shallow tide of other thoughts: memories, associations, suggestions, visual images and emotional states, ebbing and flowing round the more or less clearly emergent musical perceptions . . ." (p. 32). Neither type is found quite pure or constant: the Listener has his lapses, and the Hearer may have moments or periods of active listening. But the Listener recognises and resents his lapses, whilst the Hearer is satisfied with a vague coalescence of pleasant states, and is just unaware of his inattention. According to one subject the Hearer "lounges" instead of "sitting up".

As might have been expected, the preference of keen Listeners tends to be for 'pure' music. Their attention is wholly absorbed, apart from admitted wanderings and associations; 'meanings' outside music are scornfully, sometimes bitterly, rejected. There appeared, on the other hand, to be no correlation between general emotionality and the belief that music is the expression of an emotional 'message'.

The experiences recorded and the suggestions to psychological theory thrown out are so various that I can do no more than mention a few of the most outstanding ones at random in the hope that it may encourage the reader of this review to go to the book itself.

One interesting result of the enquiry seems to be that whereas *Listeners*, as already said, on the whole (with some exceptions) reject *non-musical* emotions (etc.), as interferences and "entanglements", *Performers* and *Composers* are far more ready to admit and insist upon 'human' emotions accompanying the musical emotion proper. In their eyes "music is full of metaphors, allegories, pictures: it is crammed with meaning beyond itself" (p. 449). The Author attributes this to the fact that the Makers of music are themselves *making* it, and that the music is so bound up with the feelings and impressions of their minds, so spun out of the composers' "innards", that it (the music) is inseparable from the feelings and impressions themselves. And, in general, the maker of music has music in his

thoughts constantly, so that ordinary experiences in a way are already musical ones.

But what of the meanings themselves, of the human passions thought to be expressed in music? The Author dwells at considerable length on a complicated and interesting theory which is the working out of a supposition that the 'human passions' expressed in music, in tunes, notes and the relations between notes are not really human emotions at all, but a "counterpart thereof" (p. 66 *sq.*). The direct experience of such emotions is described by one distinguished musician, M. Ernest, as "des états affectifs sans aucune espèce d'association ou d'interposition, sans aucune ébauche mentale d'un aspect de la nature ou d'un drame humain objectif dans des circonstances particulières" (p. 68). And M. Ernest explains it as follows: "Je suppose que l'agent physique (les ondulations sonores) agit alors par des variations de hauteur, d'intensité, de distribution rythmique, en modifiant le régime de nos fonctions organiques dans le sens d'une attitude, d'un geste, d'une mimique correspondant à certains sentiments" (p. 69). This suggests at once the "Inner mimicry" theory of Groos, and after Groos of Vernon Lee herself (in collaboration with C. Anstruther Thomson) in her *Beauty and Ugliness*. But "Inner Mimicry" is too simple. For, as has already been suggested, it is not the *same* emotions which appear to be expressed in music, but counterparts thereof, vividly described by "C. A. T." (C. Anstruther Thomson) as the "Ancestor of feeling". Music, she suggests, plays upon the foundations of the emotions, calls up embryo emotions. "A little baby nestling in its mother's arms produces, I imagine, a feeling of tenderness which one doesn't get from music in the same actual form: but certain passages of suspension and swinging between two notes give one the feeling of the verb of tenderness. If I may use so clumsy an expression. . . . It isn't interwoven with my feelings as a human being. It is the Ancestor, rather, of those feelings." (The 'verb of tenderness' is suggestive. It should be kept in mind that C. A. T. has been an 'Empathist'.)

The suggested psychological—or psycho-physiological—theory underlying these metaphors is one of *schemata*, of "movement left behind by those present sensations of movement which have informed us at the actual moment of the various modes of our movements, such as fast, slow, soft, rough, etc., including the greater or lesser energy with which these movements are made" (p. 70). It is such Schemata, such 'ghosts' which, evoked by our auditory sensations, inform us of musical spans, directions, and so on. And because Schemata have presided over our active responses to our changing moods and emotions, and because our affective states more than half consist of sense of postures, actual and potential, and are anyhow bound together therewith in experience, the movements of music (if I am interpreting rightly) awaken into new activity a rich potentiality of affective experience. This conception is worked out in the

theory of "affective memory" originated by Ribot and elaborated by the Author with the help of Sir Henry Head's work on the conception of nervous and mental energy.

Other important distinctions are those between what the Author calls Cecilians, Apollinians, and Dionysiacs. Cecilians are persons passively affected, and affected by sounds rather than by tunes. Sounds play upon them, theirs is a state of musical contemplation entirely deficient in the active work of taking stock of relations and patterns. Yet there is detachment from ordinary life, and even rapture. Apollinians and Dionysiacs enjoy their music "as calm, lucid, serene, bracing", on the one hand, and as "excited, overwhelming, spiced with pain, exhausting", on the other hand. Listeners are nearly always of the Apollinian religion, whereas Cecilians apparently tend to be Dionysiacs. (Though I am not at all certain whether I am rightly interpreting the Author here.)

I must pass over the third section entitled "Imaginative Responses" which deals with such questions as, music as a language, music as a stimulation of thought to poets novelists and philosophers, music as leading to mystical experience (the author seems rather to have her knife into mystics), as suggesting allegories and pictures and drama. I must pass over the very short but important section on collective experiments, where there are recorded the responses of different individuals to the same pieces of music. But one interesting fact may be noted, and this is that although differences of opinion and of interpretation of the expressed "meaning" of the same piece of music seem at first sight as radical as they could possibly be, yet there appears to be agreement on the general mood expressed. "Music described by the Answerer as gay was never described by another as sad." The divergences were due to differences in musical interest, attention, enjoyment, temper; to verbal, personal, sympathetic, dramatic, emotional habits of mind and so on, but with, as has been suggested, no polar differences (p. 438) between the human character attributed by various answerers to the same music. All of which suggests that music at least can suggest *something* recognised as a human feeling. In a word, music has *some* message, but its content is added by the hearer or the listener, and this content, we may note, is generally determined by the general interests of the subject outside music.

If any philosopher has hesitated (it is to be hoped some have) to generalise on the question of æsthetic standards, he should read the entertaining seventh section of this book. He will hesitate again. To say that contradictory views are recorded would be a flat way of putting it. The pages are full of the picturesque thunders and lightnings of disagreement. I like this about Mozart. "Mozart is over-rated." "Mozart demeure suspendu entre ciel et terre." "Mozart, ravissement." And this about Wagner: "Impression musicale purement esthétique." "... In a perpetual condition of adultery with treacle," "especially his erotic music must make a

great appeal", "the greatest art cannot and does not touch sexuality or morality in the wider sense". Vernon Lee comes to the conclusion that absolute 'good' in music has no meaning, and that you can only speak of 'good' for Bessie or for Isabella. *Æsthetic laws* are rules of thumb. Yet though the critic is no good really, there is something to be said for him. "Our individual and innate preferences can be greatly enlarged by the nudgings and button-holings of a critic who has real likings of his own, even if the reasons he gives us for them be pure nonsense. Did not Ruskin open our grandfathers' eyes to the loveliness of Venetian sculpture and tracery by telling them that those arrant Shylocks who exploited the Last Crusade were 'entirely godly men'?" And finally, though music is "beyond good and evil" and beauty has nothing to do with the good and the true, yet disputing about tastes is both harmless and pleasant exercise. Indignation is "sthenic" emotion, it warms up our chilly blood and adds a cubit to our puny stature. Whereas musical emotion itself has no need to be drained off, as William James said, by some little act of kindness to one's aunt, but is itself as intrinsically purifying as any such moral behaviour.

I will not stay to add any criticism. I am only bound to say that I disagree with the Author in many of her general statements, partly because they do not seem to arise out of the evidence, and partly because she does not philosophically analyse the meanings of questions or make up her mind clearly about what she thinks to be the nature of æsthetic concepts. What is Beauty? Where does it reside? What and where is the æsthetic object? What is *meant* by those who hold that there is connection between the Beautiful and the Good and the True? What are "standards"? What is "representation", what "expression"?

But, though the neglect to take æsthetic questions seriously in a philosophical way is a profound—and a common—mistake, it would be foolish to condemn this book for a few minor indiscretions in a sphere which it does not set out to explore. This is not a book of philosophy. It is nevertheless a charming book for philosophers and psychologists of æsthetic interests. I am looking forward to the time when I can begin to read it as it deserves to be read.

LOUIS ARNAUD REID.

VII.—NEW BOOKS.

General Logic. By RALPH M. EATON. London: Charles Scribner's Sons, 1931. Pp. 630. 12s. 6d.¹

THE general character of this work is well and concisely expressed by the author's introductory statement: "This text-book," he writes, "presupposes no knowledge of logic on the part of the reader. It is written with the elementary but intelligent student in mind. It is intended to cover the whole subject, but especially to show the unity of the classical Aristotelian tradition with contemporary mathematical logic. The book is eclectic, a statement of ideas which have become—or are fast becoming—the common property of all logicians. It represents no school and has no philosophical axe to grind."

The execution of the plan is extremely good. The book is divided into four parts. Part I., entitled '*An Introductory Definition of Logic*', is of the nature of an essay, reviewing the subject as a whole, introducing the concepts and the problems with which the subsequent detailed exposition is concerned. Part II., *The Subject-Predicate Logic: The Aristotelian Tradition*, presents the classical doctrine, critically interpreted in the light of modern logical conceptions. Part III., *Mathematical Logic*, offers a systematic exposition of these later developments, following in the main the lines laid down by the first edition of *Principia Mathematica*. Part IV. is concerned with *Induction*. There are two appendices; Appendix A, on *The Propositional Interpretation of the Boole-Schröder Algebra*, and Appendix B, *Problems and Exercises*. The latter contain, in addition to those of the traditional type, a useful collection of exercises pertaining to the topics of Part III.

The introductory definition is as follows: "Logic is the science that exhibits all the relationships permitting valid inference that hold between various kinds of propositions considered merely in respect to their form." In explication the author provides us with a more detailed account of the nature of the proposition, of its relations to the sentence, the fact and the judgment, of the distinction between matter and form, and of the different propositional and validating forms.

The proposition is treated as an undefined concept, but many things are said about it which at least define the author's position on a variety of controversial matters. It is distinguished from the sentence, the fact and the judgment, chiefly on the ground that such adjectives as 'true', 'false', and 'doubtful' directly apply to it, but do not apply in the same sense, if at all, to the latter concepts. Both propositions and facts are 'abstractions'. The symbol and what is symbolised constitute a unity; facts 'blend with propositions, and propositions fuse with immediate intuition in the apprehension of facts'. The criterion of a proposition is 'completion and unity of meaning', and this, it appears, is intended to

¹ An apology is due to the Editor and the readers of MIND for the delay in the review of this work. For this delay the reviewer is alone responsible.

imply that the act of judgment does not perform the double function, firstly of bringing together the elements of a proposition, and secondly, of accepting or rejecting the whole thus constituted. On the distinction between matter and form we find the following curious (and surely inadequate ?) remark : " Now, nothing more is meant by ' form ' than that which is common to large classes of propositions ". But, of course, what Prof. Eaton means by ' form ' is precisely what other logicians mean. He proceeds to distinguish molecular (compound) from atomic (simple) forms, and both from general forms. In all this the account conforms to what is now almost conventional. We note, however, that the author refuses to be enticed into attempting further simplification of recognised simple forms, either by regarding qualities as monadic relations or relations as dyadic or polyadic ' adjectives '.

On the subject of general propositions, the author is clearly not so happy (but, then, who is ?). It is to be suspected, however, that he has made things unnecessarily difficult for himself in this connection by asking the unfortunate question : What is the general element in a general proposition ? This appears in certain places to lead him to the conclusion that all propositions containing a universal must *ipso facto* be general ! Following distinguished precedents, he is nevertheless able to postpone the day of reckoning by conducting the rest of his discussion in terms of ' propositional functions '. The introductory section of the work is concluded by a brief discussion of the distinguishing features of the subject-predicate logic and a few pages on Induction. An interesting feature in the latter is the author's attempt to find a definition of inference covering both deductive and inductive forms. To this end it is suggested, in effect, that as implication is the validating relation which confers *truth* upon a consequent, given truth in the antecedent, so probability relations confer ' *scientific value* ' upon a generalisation given truth in the particulars from which the generalisation is drawn.

The treatment of traditional logic with which Part II. is concerned is certainly of very considerable interest, but it is extremely long. Everything is dealt with very fully, sometimes with greater elaboration than the topics strictly deserve. Eight pages are given to the inverse variation of extension and intension, and nine to the dilemma—to select but two examples from many that might be given. Moreover, a certain prolixity is entailed by the order of exposition. Inspired by laudable and understandable intentions the author commences with the syllogism, proceeds to immediate inference, and comes only at the end to the classical doctrine of terms. Considerable repetition and restatement is thus inevitable.

In Part III. we arrive at the systematic presentation of ' mathematical ' logic. This part is excellent. Its excellence resides in its simplicity and its balance. The author avoids the two obvious errors, one of merely telling the reader what mathematical logic is about, and the other of going into over-much detail. Sufficient is said to enable the ' elementary but intelligent student ' to obtain practical familiarity with the symbolism and practical facility in its use ; but the number of theorems selected is restricted, so as not to obscure the general picture. If a complaint must be recorded, it is simply this. There are certain rather crucial questions, the discussion of which the author appears to be anxious to avoid, notably the theory of descriptions and Russell's conception of incomplete symbols. No doubt these are difficult subjects and perhaps unsuitable for the elementary student, however intelligent. But if we are concerned, as in fact

we are, with the system of the *Principia Mathematica*, can we, after all, avoid them? In spite of this, Eaton's exposition of the formal deductive process is likely to hold the field for many years to come as the best of the elementary introductions.

The theory of Induction is treated in a somewhat compressed manner. The first chapter of Part IV., in accordance with the author's general method, is of the nature of a general survey of the topics to be considered. Chapter II. is devoted to Mill and the Uniformity of Nature; and (having in view the high standard attained in other parts of the volume) is rather lacking in distinction. In Chapter III. we find an interesting attempt to combine the views of Nicod with those of Mr. J. M. Keynes. Where these views are inconsistent the author appears to follow Nicod in preference to Keynes. The fourth, and last chapter, continues the discussion. It is only in the last pages of the book that the author allows himself the relaxation of a little discursive methodology. 'Natural science', he regretfully concludes, 'cannot be made completely deductive; it always faces the unknown horizons of the actual world. Those qualities which make a theory a good explanation, generality and penetration beneath the surface of fact, are the very ones which stand in the way of proving its truth. Logic supplies form to the disciplined imagination in science, but it cannot supply the intuition that creates a valuable theory.'

By Eaton's death, shortly after the publication of this work, Logic has lost another of its distinguished younger exponents. But to have written both *Symbolism and Truth* and the *General Logic* was not an insignificant achievement. No logical bookshelf is complete without both of these uniquely complementary volumes.

C. A. M.

What is Beauty? By E. F. CARRITT. Oxford: Clarendon Press (Milford), 1932. Pp. 111. 3s. 6d. net.

THAT it is never too late to comment on a good book is a sufficient excuse, not for the lateness of this review, but for its appearance in spite of its lateness.

In this little book Mr. Carritt deals with the main difficulties of *Æsthetics*, (i) Disputing about taste, (ii) Beauty and Truth, (iii) Beauty and Goodness, (iv) The Reality of Beauty, (v) Beauty as Pattern, (vi) Beauty as Expression, with admirable economy and with a simplicity which deserves to be called Platonic and which does not detract from the cogency of the philosophic thought, but rather enhances it. Among the best chapters is the first. This, answering the objections which are usually raised against the possibility of objectivity in *æsthetic* judgments and which are based on the great variety of these judgments and on their lack of agreement, shows in an interesting way that the disagreement in question is often not on the subject of *æsthetic* value but on something else, and is due to the many different senses in which 'beauty' is used. The chapter to which one feels inclined to object most strongly is the third: Granted that beauty and goodness are not identical, still this is not to be proved by the fact that nobody would "go for literary and artistic criticism to a man with an unblemished character as a bank-porter". Goodness is surely more than "good conduct" and is pre-eminently incarnate in a man who is not merely an irreproachable bank-porter, while such a blameless official may not be a good man at all. If we think (as we should) of the good man *par excellence*

as the person who is possessed of a deep and fine insight into the meaning and demands of life, who continually makes the right adjustments to these demands, who is at one with all persons and with all life, and who can inspire and mould us, then it is difficult to think of him as appreciating what is æsthetically bad, and even as not appreciating what is æsthetically good. Conversely, most, and perhaps all, bad art seems to be morally bad. In the first place, it lyingly claims to be what it is not, and what it makes no attempt to be, namely, art. Secondly, it aims, generally or always, at filling us with sentimentality and self-complacence, which are always immoral and involve the distortion and debasement of moral sensibility. It is certainly doubtful whether anything æsthetically bad can do anyone 'good', in the sense at least of deepening his moral apprehension and contributing to his moral strength. "I should not be surprised", writes Mr. Carritt, "if Longfellow's 'Life is real, life is earnest' had done people good, but I cannot think it very beautiful." That poem certainly is not very beautiful; but it is also morally false, shallow and otiose rhetoric. It is apt to produce in one the impression that facing the realities of life is something simple, easy, "ever so nice", and something for which one can claim credit and pat oneself on the back; therefore I should be very much surprised if it had done people good. Similarly, the bad poetry of Browning is also morally bad; for it produces a facile, windy, immoral optimism, the only moral optimism being that of the man of sorrows. In the same discussion on the distinction between beauty and goodness we have another bit of misleading *simplisme* when the distinction is illustrated (though with some hesitation) by pointing out that "it is often wrong for various reasons to enjoy or produce" beauty. Of goodness, too, we may say that it is often wrong to enjoy it (*e.g.*, to enjoy it only contemplatively when we ought to be enacting it), and wrong to produce it (in the sense that it is wrong to exhibit at this moment the goodness which is appropriate only to another moment). Beauty and goodness are profoundly alike in this: on both we ought always to keep our grasp, and just as there is an appropriate moral response, so perhaps there is an appropriate æsthetic response, to every situation, though we may perhaps have to say that there can be an æsthetic response not merely in artistic creation and contemplation and in the enjoyment of natural beauty. (I do not know whether this is so, but the question always forces itself upon us when we are considering the relation between beauty and goodness.) One other distortion of goodness Mr. Carritt makes, with the result that he is prevented from drawing an analogy between goodness and beauty which is yet something like the one he is trying to make: "If a man does what he thinks he ought to do", he writes (p. 69), "and does it for that reason, then whether his judgment were true or false, he has the perfect moral experience, deserves every moral approval, and can suffer no remorse". (That this should be written at a time when almost throughout the world men are committing every most revolting atrocity on each other—Nazis on non-Nazis and Communists on non-Communists—all, apparently, doing what they think they ought to do, and doing it for that reason! Truly, the good conscience, as Schweitzer says, is the invention of the devil.) Surely Mr. Carritt ought to have said that in such a case the agent's experience is not even imperfectly moral (that his 'thinking' is no moral thinking), just as the appreciator's experience is not æsthetic when he is appreciating an ugly object. Goodness and Beauty are, indeed, not identical. But the relations between the two are found to be very intimate, complex, puzzling and most difficult to state when we insist on considering goodness which is

goodness. It is therefore a great pity that writers on æsthetics should so generally yield to the temptation of caricaturing goodness (or morality).

With Mr. Carritt's refutation of the theory that beauty is truth and that art is mimetic or representational I heartily agree. But does he not bring his own head under the blows he so deftly deals in the second chapter, when in the last chapter he goes on to identify beauty with expression of feeling? It is not always easy to see the difference between expression and representation, and it often seems that Mr. Carritt and others of his way of thinking mean that art (or the beautiful) is that which truly represents, depicts, describes or brings something before us. But (so they apparently will have it) that which is represented, depicted or described must be consciousness (for their "feeling" is as wide as "consciousness": an emotion, sentiment, mood, state of mind, impulse, feeling, are all "feeling"). Thus, we are told (pp. 32-33): "Certainly what we look for in novels and poetry is truth about what we may call the human heart. If, as we read, we are convinced that this is how a human being could feel and has felt, however misguidedly, then we have poetic or imaginative truth. And to be convinced of this we must recognise the feeling as one of which we ourselves are capable, had our circumstances been different. . . . That is imagination in the artist and imagination in the reader, it is knowledge of the human heart, artistic truth, recognition of the essential brotherhood of men". Again, on p. 107: "the so-called *truth* of beauty . . . would on this view be truth of expression, the correspondence of the image to the feeling". Mr. Carritt might object that I am unfairly pressing the language of accommodation in which he is trying to do his best for the truth theory, however uncongenial the latter is to him (but these are not the only passages in which he exposes himself to his own blows), and that what he means is that in true (real) art there really is feeling and expression. What then of the bad art which fills us with sentimentality and exploits our emotions? Is it the case that sentimentality and these emotions are not real feelings or are not really felt or are not expressed? Mr. Carritt holds (p. 108) that in bad art there is no expression but I think he allows us to suppose that there is feeling stimulated but not expressed. Yet he implies that experiencing stimulated feeling is at least the main constituent of the æsthetic contemplation of good art. But in this book, as everywhere else, the æsthetic of feeling never makes it quite clear whether the real æsthetic experience is the having or the contemplation of feeling or both. There is one sure refuge from the dangers of representationalism, namely, to say that the work of art does not describe a pre-existent feeling but brings into being a feeling which has its being only in the work. This refuge Mr. Carritt takes (p. 102). But in that case, and, indeed in any case, he should do what neither he nor any other champion of sentimental æsthetics ever does: he should make it clear that the feeling expressed by the whole work is different from the feelings of the characters in the poem, drama or novel, which feelings are in a sense represented as well as expressed, and he should tell us how the feeling is related to the feelings.

Many more objections can be and have been urged against any and every sentimental æsthetic. These objections Mr. Carritt very rightly does not discuss in so short a work. But I do not think they have brought about any change in his position. They cannot, of course, be resumed here. I will only say that Mr. Carritt does not convince me that such an æsthetic can make out that the æsthetic experience and judgment are not entirely subjective; nor does he convince me that by means of his

aesthetic he can intelligibly locate their respective rôles to the subject and object in the transaction between the two in which the flowering of beauty is supposed to occur.

Whether the student agrees with Mr. Carritt wholly, or only partly as I do, or not at all, he will find this small book more useful than many a larger one in which space only means capacious hiding-place for thought.

P. LEON.

The Place of Minds in the World. Gifford Lectures at the University of Aberdeen, 1924-1926. First Series. By SIR WILLIAM MITCHELL, K.C.M.G., Vice-Chancellor of the University of Adelaide. Macmillan & Co., Ltd. 1933. Pp. xxv + 374. 12s. 6d. net.

THE object of this book and of the one which will follow it is to discover what conclusions about the place and power of minds in the world emerge when due emphasis is laid both upon philosophical and scientific enquiries. According to Sir William Mitchell, philosophers and scientists have been apt to busy themselves with problems which conceal the nature of the facts they are concerned with. Philosophers and scientists have wondered how thoughts are connected with their objects, how minds are connected with their bodies and in particular with their brains, and how purposes are connected with their fulfilments. They have supposed that the difference in nature between thoughts, minds, and purposes on the one hand, and objects, bodies and fulfilments on the other, is so great that the mode of their connection is a matter of mystery or conjecture. They have failed to see that when what is asked for is the place of mind, place is not understood in the sense in which objects in the world around us or our own brains have places, but in a sense special to minds. "A mind's own place" is "to feel, or be subject", page 3. The problem which arises when we consider, for example, the connection between thoughts and their objects, is how a thought, which is in one place, can be the thought of an object which is a long way off; and this difficulty has led to solutions according to which we are aware of images of objects and not the objects themselves. But the whole problem has arisen from the assumption that there is a distance between thoughts and their objects, and is avoided when we realise that there is none. Sir William Mitchell gives the name of 'gulfs' to these sharp distinctions which we mistakenly draw, and in this volume of his work he describes what they are, points out their failures, and provides a view of the nature of minds which is to enable us to avoid them.

In explaining these positions Sir William Mitchell defends an extreme realist theory of knowledge. He holds that theories which require the interposition of ideas or images between what is known and the knower, are due to two main errors. One, that of supposing that our minds are in our heads, and so separated spatially from what they know, has already been mentioned. Corollaries which are alleged to follow, in part, from the rejection of this error are that, so far from nature being in space, space is in nature, and that, contrary to the general opinion that nature is in time, time too is a part of nature. The second error which leads to idealist or representative theories of knowledge is the confusion we are prone to make between the mental events which have correspondences with bodily and extra-bodily events, and the acts of awareness which are in

direct relation with their objects. The connection between mental events and their physical correlates Sir William Mitchell calls "the correlation line", and the relation between an act of awareness and its object he calls "the living line". The confusion, in his own language, is between "the central end of the correlation line" and "the living line". The various physical events with which the mental events correspond are means necessary if the mind is to be aware of objects, but they are not the objects we are aware of; and so the relation between them and their mental correlates is different from the relation between the mind and its objects. It is from "the living line", *i.e.*, the situation in which the mind is aware of some object, that data are observed from which the knowledge of psychophysical correlations may be derived. When this confusion is prevalent, philosophers and scientists, seeing how mental events are accompanied by physical correlations, tend to regard the mental events as effects of their correlates, and thus arises the view that acts of thought are impressions or ideas. Three arguments against the impression view are given on pages 39-43.

It would be natural to object to Sir William Mitchell at this point that the main reason for rejecting a plain realist theory of knowledge is that there are illusions of sense which are hard to account for without supposing that there are such entities as previous philosophers have called ideas or impressions. So far as I can discover, there is no direct attempt in this book to answer this objection, nor is there any attempt to explain just what happens when we perceive physical objects. But the account of truth and error on pages 42 and 43 is perhaps intended to remedy the former deficiency. Here it is suggested that there are "two conditions required of a thought that it may be true. One is that its object can be compared with the real or other object that it takes for standard. The second is that the standard one is unaffected by the thought of it", page 43. Thus truth is not a relation between thoughts and objects, but between an object thought about and some object taken as standard. "When a thought questions whether it is true, it compares itself with nothing; it compares the object in its grasp with the object that it wants to grasp, and has made standard", page 43. It is very hard, however, to understand what this theory comes to. Even if we assume that the word "standard" is in this context free from ambiguity, the words "thought" and "grasp" both raise difficulties. Sir William Mitchell's use of the word "thought", which on page 129 he defines as "the consciousness of an object", and on page 144 as "the gesture of attending grown spontaneous", would suggest that he has failed to notice the distinction between knowledge and opinion, and between acquaintance with and knowledge about, which many modern philosophers would consider essential. If he has not overlooked these distinctions, but considers them misleading and believes that the word "thought" is less so, it would have been helpful if he had defended his usage. The word "grasp" he uses frequently to mean the being aware of an object. In the passage just quoted it is the thought that "grasps" its object. On page 77, however, it is held that one object "grasps" another: "but we cannot call intelligible objects 'only concepts', though they are, or they grasp, the very laws of nature. The power of a concept is independent of its origin and of its user. Its history as hypothesis, definition, equation, is the story of its effort to grasp some necessity in a world which remains unaffected by the grasp." His final view is, however, that it is thoughts that "grasp", for on page 131 he writes: "An object is in my thought as an apple is in my grasp; it is in that simple

sense that every sensation, idea, dream, judgment, embraces its object". On the author's own showing, however, grasping should be a very inappropriate metaphor, for the hand which grasps is spatially related to what it grasps, while a thought is not spatially related to its object.

Sir William Mitchell goes on to enquire how memory can be accounted for without calling in the aid of ideas of past objects to be stored in the mind when the objects are no longer present. But a review of this book would be misleading were it to suggest that epistemological problems were the only ones discussed in it. There is also a chapter on ethics, a discussion of the methods and categories of science, and a long account occupying nearly half the book, of the development of modern physics up to the introduction of the quantum theory. A serious defect of this work which makes what merits it may have extremely difficult to discover, is its great obscurity. It is written in a somewhat oracular style which might have been bearable in a short essay but is hardly tolerable in a work of any length. The summary provided at the beginning does little to enlighten the reader, nor is he helped in the slightest when he turns desperately to the preface and to the epitome on the dust-cover. There are a few quaint sayings which some people might be pleased to meet with, such as: "when a man dives into cold water, no little image of him shivers in his skull", page 40. These sayings, however, are no substitute for a method of exposition which would ensure that the author's meaning could be grasped with something approaching ease, and I am doubtful whether many readers will be prepared to give themselves the trouble necessary to understand it. Another defect of the book is that although contemporary physicists are freely referred to, no reference is made to contemporary philosophers. This is a defect because contemporary philosophers have been much concerned with the problems Sir William Mitchell is endeavouring to solve, and some of the solutions they have attempted merit discussion at least, if not acceptance. Perhaps this omission will be remedied in the second volume. On page 42, when he is criticising the copying theory of truth on the ground that in order to know whether the idea of an object was like the object we should have to be aware both of the object and of the idea, the author says: "This was the reason, the only reason, for the scepticism of Hume." This statement is not borne out by a study of Hume's writings. There is a misprint on page 51 in the quotation from Laplace, where "beings it nearer" should be "brings it nearer".

H. B. ACTON.

The Horizon of Experience: A Study of the Modern Mind. By C. DELISLE BURNS. George Allen & Unwin, 1933. Pp. 372. 12s. 6d.

THE aim of Mr. Burns' book is original and attractive—to direct attention to the half-realised possibilities of a future as yet unexperienced, which possess so powerful an attraction for men's minds at the present day. In Part I. (chaps. i.-iv.), he shows how the record of human civilisation discloses a rhythmical alternation between epochs of transition from an old to a new outlook upon the world, and those dominated by relatively stable formulations of the experiences thus freshly assimilated. Instances of the former type are the centuries that saw the breakdown of Græco-Roman culture and the dawn of the Middle Ages, the epoch of the transformation of the mediæval world-view into that of modern humanism, and the time

in which we are living now. Such periods as these are marked by reaction against traditional standards of thought and life, and also by a zest for experiment in every branch of culture, directed not so much to an enlargement of knowledge on established lines as to what Mr. Burns calls a new 'level' of experience, i.e., to the discovery of facts and values hitherto unexplored. These "horizon" facts and values, dimly descried on the utmost verge of men's field of vision, stir an eager response in men of exceptional ability. Mr. Burns offers some admirable remarks in his fourth chapter on the prevalent tendency of psychologists to treat all exceptional personalities alike as pathological deviations from the normal, thus obscuring the vital distinction between the subnormality of lunacy and the supernormality of genius. What he is chiefly concerned to stress is the process of forward vision, whereby the man of genius, be he artist or prophet or scientific thinker, discovers fresh forms of value. "The real is valued before it is known" (149). In this maxim, which is fundamental for Mr. Burns' enquiry and also throughout the volume, may be discerned the influence of Prof. Alexander's philosophy. The main body of the book (Part II.) consists of an attempt to trace the "pull" of these "horizon-values" in the science (chap. v.), in the art (chaps. vi.-vii.), and in the moral (chap. viii.) and the religious (chap. ix.) outlook of the modern world. The author's chief interest lies in the data furnished by the fine arts. He endeavours, not altogether successfully, to treat the other subjects as in their several ways forms of art. We are told, for instance, that morality is the art of living, as it was also for the Sophists in ancient Greece; while religion, being practical, is spoken of as "a form of art" (278), its claim to give knowledge being ignored, and theology dismissed as a discredited science. Even modern science, though admittedly distinct from art, is treated under its "artistic aspects". While there is much in these chapters that is suggestive and valuable, the handling of more strictly philosophical topics, e.g., the nature of scientific truth (in chap. v.) shows a certain lack of firmness and consistency. On the more general issue, it might be questioned whether Mr. Burns does not over-estimate the extent of objective change that is being brought about in civilisation at the present time. He fixes his attention throughout on the process of men's experiencing rather than on the world as experienced, and has little difficulty in making good his case for rapid and radical changes in the personal outlook of modern artists and thinkers; but does this mean that their ardour for experiment is proving proportionately effective to change the structure of the civilised world? There is much to be said for the view that such objective changes are most marked in epochs of stable formulation. The Victorian Age, for instance, surely saw a wider and more rapid transformation of society and of physical nature than seems likely to issue from the somewhat indeterminate restlessness of the present generation.

Though the interest of this book, as Mr. Burns tells us in the Preface, is philosophical, it makes no claim to put forward a philosophy. Rather its purpose is to suggest new data for the philosopher of the future to work on. The time is not ripe for a definitive formulation of the new experiences that are crowding in upon us, and the historic formulations are dismissed, somewhat cavalierly, as back numbers. Mr. Burns applies to philosophy, as also to morality and religion, Wilenski's doctrine in regard to art, that past achievements can only be understood by those who have learnt to appreciate from within the creative processes of their own time. But in Part III. he offers a brief and tentative sketch, not of a metaphysic, but of a *Weltanschauung*, i.e., "the expression of a general attitude towards all

the experience an ordinary person can hold within his attention" (341). He shows himself as a follower, with reservations, of Alexander and Whitehead. The chief reservations are these two: (1) Space-Time is not the "stuff" of all existents, for there are aspects of material things, to say nothing of acts of experiencing and of values, which fall outside its scope; it is rather, if we read Mr. Burns' meaning rightly, what Alexander would call an "empirical quality". On the other hand (2), he clearly prefers Alexander's temporal "deity" to Whitehead's God. It is hard to see how Mr. Burns can find room in the universe for any constituent that is non-temporal. His single reference to "eternal objects" (363-364) is not free from ambiguity. He is content to posit the possible as a metaphysical *prius*, adding the somewhat naïve remark that "a principle of connection, explaining how the possible becomes the actual, would be valuable in philosophy" (*ibid.*). Undoubtedly; and Whitehead's God is a heroic attempt to meet the *desideratum*. Other philosophical questions will be provoked in the reader's mind by these closing chapters, e.g., by the passage on singular existents and their relations, where qualities like greenness are interpreted as relations of existents to one another. It is not as easy as Mr. Burns seems to think to clear the substance-quality category bag and baggage out of metaphysics. But it would be unfair to criticise in detail what is only a provisional excursion into the higher reaches of philosophy. Mr. Burns' theme is the horizon, half-revealed to our view and half-concealed from it; and we cannot expect precision in the handling of what *ex hypothesi* eludes definite formulation. The value of his book lies rather in the novelty of its central idea and in the wide survey that he offers of the bearings of horizon-values upon modern life.

W. G. DE BURGH.

The Emergence of Novelty. By C. LLOYD MORGAN, D.Sc., LL.D., F.R.S.
London: Williams & Norgate Ltd., 1933. Pp. 207. Price 7s. 6d. net.

THE author modestly remarks in his Preface that he regards this book as "no more than an episodic talk from an old arm-chair". Readers of Dr. Lloyd Morgan's previous volumes and articles have desired from him further elucidation as to certain points in his expositions of the doctrine of emergent evolution and as to his method of approach to the "problems of reality", which involves drawing distinctions between science and philosophy, and between the physical and the psychological lines of inquiry within the domain of science: and this recent book has been called forth by questions received from correspondents.

The latter of these kinds of question is dealt with in the second chapter. Dr. Lloyd Morgan's reply is clear; and, in so far as the former of the two distinctions is concerned, he follows the usual differentiation of science, as an account of how things happen, or as 'description' issuing in symbolic shorthand, from philosophy or metaphysics as an attempt to account for Nature's procedure in terms of explanatory or interpretative conceptions, mechanical, organismic, spiritualistic, teleological, etc., such, e.g., as activity or design.

The larger request, for a restatement of Dr. Lloyd Morgan's version of the story of cosmic advance, and more especially of his views as to mental development, is generously met; a dozen chapters are devoted to these subjects. These chapters contain much illustrative matter, drawn from

the fields of physics, biology, psychology, and theory of value; and in them notice is taken, by the way, of certain views of contemporary philosophers such as Whitehead and Alexander, and comparative psychologists such as Lashley and Troland. The "episodic talk", as the author calls it, which is given here will doubtless serve to make clear, relatively speaking, what Dr. Lloyd Morgan means by 'emergence' and 'novelty'. His primary aim, in this volume, is to assist popular thought, which can be contented with ideas more or less indefinite. Hence he does not enter into such detail, as to the terms and relations that are involved in analysing the idea of emergence, as was necessary in his earlier and larger work, the Gifford Lectures. The philosophically trained reader, who is more exacting in his demand for clearness and distinctness, will therefore not find in these pages a more precise and thoroughgoing distinction than he has already been offered between emergence of novelty and various other things from which Dr. Lloyd Morgan considers it to differ.

Novelty is described or defined in two ways. Firstly, it is said to be a new pattern of process, or a new mode of relatedness, which calls for a new formula, and in virtue of which new units emerge: *e.g.*, molecules, over and above atoms, with properties such as are neither aggregates nor 'resultants' of atomic properties. This emergence of a new unit is said to be incompatible with mechanical theory. 'Mechanical' is a highly ambiguous term, and many who call themselves mechanists would not deem it inconsistent with their principles to recognise in the molecule a different unit from the atom, with different properties. What needs to be shown, in this connexion, is that the new relatedness which characterises the novel unit is necessarily different from a new grouping or configuration of previously existing units. That the configuration of the atoms within a molecule is as determinative of physical properties as is the nature of the atoms themselves is known to the chemist; and if it be conceivable that a like conditioning of physical properties by configuration-relations obtains throughout the inorganic realm—the unificatory principles which characterise the organism being as yet too mysterious for theoretical consideration—the new relatednesses in which novelty consists may be but new configurations of unchanging entities. In that case, in the world as described by 'microscopic' physics (as distinct from the world as sensibly perceived, or on the molar scale) change of configuration would be the only kind of change, and the doctrine of emergent novelty would be compatible with the classical mechanical theory, working with only mass, length and time. If, on the other hand, the former doctrine presupposes that in the emergent there is not merely change of relations but change of 'terms', then every particular event must be a case of novelty, and there would be nothing left in antithesis to which the novel could be characterised.

Secondly, original novelty, or the novel as it first occurred, is said to be that which is unpredictable from knowledge of what was knowable before its emergence: *e.g.*, the first appearance of matter in the liquid form when the cosmic temperature fell beneath that at above which matter could only exist in the gaseous state. But this unpredictableness would seem not to be an adequate criterion of the novel. For one may ask whether *any* qualitative change in the world as sensibly perceived could ever have been predicted previously to acquaintance with it or with similar cases. If not, there is emergence in every kind of event.

Thus, when we look beneath the surface, the author's distinctions, in terms of which he defines emergent novelty, either vanish or become unclear. The contrast which he is undoubtedly able to maintain is that

between the known and the as yet unknown parts of the plan according to which change proceeds in Nature. The commonly used word 'epigenesis', signifying continuity of growth of an x , through interaction with a y , into a z , certainly cloaks our ignorance as to ultimate questions that are involved; but 'emergence of novelty', expressive as it is of a need for an idea that is analytically clearer than that of epigenesis, seems to be a name for a conception that is not clearer.

F. R. TENNANT.

The Philosophical Approach to Religion. By ERIC S. WATERHOUSE, M.A., D.D. London: the Epworth Press, 1933. Pp. 231. 5s. net.

PROF. WATERHOUSE describes his book as an elementary treatment of his subject, and this is true, if we take "elementary" in the best sense. No space is wasted in a compressed but lucid argument. The writer strives throughout not only to give good reasons for the position he elects to stand upon, but to show that his opponents are of necessity entangled in difficulties more grave than his own. We cannot believe, he holds, that our intellectual powers are our sole guide to the real, while our affective and volitional nature leads nowhere.

In some general sense the experience of religious men is accepted in this book not merely as existent, but as veridical. But this gives rise to difficulty when we find that Christian experience is being put aside as a source (the name of the Founder of Christianity does not occur in the Index). We feel it to be odd that the teaching of Plato is appealed to frequently, not the teaching of the Bible; for the Bible asserts doctrine which, bearing as it does on the nature of the universe and the conduct that befits us in it, is as metaphysical as anything in Plato though not affirmed as the result of metaphysical argument. To *what* religion, we ask, are we being shown the philosophical approach? If Dr. Waterhouse is offering an elementary philosophical interpretation of the best religious experience of the race, ought not the Psalms and the Gospels to supply part of the material interpreted? In point of fact, the final position here reached with respect to immortality is an idea drawn from the Bible, and (I think) found nowhere else.

Religion is described, not to say defined, as "an attempt on man's part to secure his relationship towards the awe-inspiring aspect of his surroundings" (p. 16). It is added, with point, that for the human race it is a fortunate circumstance that agnosticism has never been the doctrine of primitive thought. Religion, as going to dilate the mind, has high importance for culture. In an able discussion of religion and science it might perhaps have been suggested that a certain tension between the two is not only inevitable but wholesome. An impressive statement is given of the view that the objective character of morality goes back to the nature of God, inasmuch as belief in a righteous God plants morality in the constitution of the universe.

A chapter devoted to the purpose of philosophy offers an instructive bird's-eye survey of its theme. Professor Waterhouse speaks a good word for Pragmatism, giving the term, however, a meaning so broad that it scarcely remains a distinctive theory of knowledge; and we cannot but continue to wonder how Pragmatism as a theory of truth could be applied to the statement that Julius Cæsar died in 55 B.C. From the philosophical standpoint he remarks trenchantly that "the notion that there is any

more certainty as regards ultimate scientific truth than there is as regards ultimate religious truth, is baseless" (p. 61). He is convinced that the new physics has made an end of the notion that real knowledge is limited to what can be rationally conceived. Both the ontological and the cosmological theistic proofs lead rather to the Absolute than to God. Fresh interest is imparted in this section to the theistic argument to or from design. On Kant's handling of the moral proof a suggestive remark is made: "The inwardness of Kant's argument is exactly that of the ontological argument he dismissed, the conviction that the ideal must be the real. Kant, instead of trying to prove this, as Anselm did, by logic, asked us to consider it as necessitated by moral sense" (p. 96). The sound conclusion eventually is reached that belief in God is its own guarantee. God is infinite-finite and His limitations self-imposed. Once Dr. Waterhouse has gone so far, one cannot quite see why he shies at the idea of the Divine omnipotence on the ground that it implies a contradiction. It may well be true, as he says (p. 183), that no race has ever continued to worship an impersonal principle; but is it not also a fact, to quote Tiele, that "man's religious consciousness has invariably caused the rejection of every system which limited the omnipotence of God"?

In a live chapter on the Idea of the Universe, largely devoted to the theory of knowledge, we meet with some obscurity of language, perhaps of thought. I am baffled for instance by the statement (p. 131) that the scratch in a finger is "a brain-process which the mind has perceived". Epistemological idealism is argued for, though not with emphasis, and in strictness the trans-subjective reference in knowledge is restored by the later admission that *minds* are independent reals, as well as an "unknown something" which causes mind to perceive. It may be that the discussion would gain in clearness were it brought out explicitly that the same philosopher can with entire consistency be an idealist in metaphysics, and a realist in theory of knowledge.

There is a valuable chapter on the Idea of Man, in which determinism is treated of with vigorous clarity, though we should have been allowed to see more of the case *for* determinism, all the more that in the end God alone is held to be free. Besides, less attention than might have been anticipated is given to the question what freedom means in our personal relationship to God. For religion, as it seems to me, the supreme point at issue is whether sinful man can of himself return to God. Similarly, it would have been appropriate to bring out the extreme importance which characteristic religion attaches to the Divine transcendence, rather than, more or less, to represent transcendence and immanence as of equal value. What faith says is not so much that the immanent God is transcendent as that the transcendent God is also immanent.

It is difficult to write freshly on the problem of evil, but Prof. Waterhouse has done it. In a striking passage, he makes the point that no problem of pain exists where there is no belief in God.

If the business of an Opposition is to oppose, the critic has no option but to criticise. Nothing, however, in the foregoing review alters the fact that Dr. Waterhouse has produced a volume which answers its purpose admirably, and that he has, on page after page, thrown new and welcome light on old and persistent enigmas.

H. R. MACKINTOSH.

Ethical Systems and Legal Ideals. By FELIX S. COHEN, Ph.D. New York : Falcon Press, 1933. Pp. xi + 303. \$ 3.75.

DR. COHEN is both a lawyer and a philosopher ; and the book before us is dedicated to both disciplines. The first two sections, entitled respectively, 'The Ethical basis of legal criticism', and 'Legal ideals and the Good Life', are devoted to the thesis in jurisprudence that the nature and purpose of law cannot be formulated without reference to ethical theory ; and the following sections, entitled 'The Good', and 'Law in Life', set forth the writer's views respecting the fundamental basis of morals.

The most interesting section is the third, in which Dr. Cohen discusses the logical problem of the definition of the Good. Rejecting the purely sceptical view that 'A is intrinsically good' is a meaningless proposition (whatever value be given to A), the writer considers the alternatives of 'ethical absolutism'—that good has a constant, though possibly undefinable meaning, and 'ethical relativism'—that the meaning of good is always and only determined by its context. 'Between these incompatible alternatives we have discovered no natural basis of choice, nor have we been able to show with any conclusiveness that other ethical alternatives are untenable. It is in the shadow of these doubts that our legal philosophy must make its very beginning. The conclusion is not a pleasant one. But the stories philosophy tells do not all have happy endings.'

But while sceptical throughout of the validity of *a priori* proofs, whether affirmative or negative, Dr. Cohen finds most intellectual satisfaction in the path which, starting from 'ethical absolutism', leads through denial that good is *identical* with any natural (or therefore with any other) predicate, to the final view that the predication of good is equivalent in 'truth value', or in denotation, to hedonism.

The objections to this position are examined and countered with great controversial vigour and lucidity. There is, however, one line of attack upon Hedonism which Dr. Cohen does not seem to meet. If the *summum bonum* is equivalent (not in meaning but in realisation) to the maximum of happiness, it depends upon two variables, the number, *n*, of sentient beings, and *p*, their average happiness ; the problem of conduct is to make *np* a maximum. If this maximum is obtained by making *n* very large, and *p* small, the hedonistic ideal is none the less satisfied ; and if by reducing *np* we greatly raise *p*, that ideal is defeated. But it would seem in each case that ethical common sense would give a contrary verdict. If this objection is valid, it would point to the conclusion that the mere summation of the satisfactions of different individuals yields an entity too abstract to serve as a moral ideal.

The sections of Dr. Cohen's book which are devoted to purely ethical inquiries are, in our opinion, superior both in matter and in style to those in which he treats of jurisprudence. In the former he displays a gift for terse, lucid, and penetrating statement in which many readers will recognise with pleasure hereditary traits. Those excellences of style are less conspicuous in the sections treating more directly of law. Indeed, one is tempted to think that the author would have done better not to have essayed to bring into connection his ethical speculations and his theories as to the intellectual obligations of the judicial office. It is true that what judges think about social policy is more important in America than in England, because of their power of nullifying legislation. But in neither country is it possible seriously to maintain that judicial opinion as to the nature of the Good is of great practical importance. So many happy and

largely uncontrollable conditions have to be combined in order to produce a professional class of honest, patient, authoritative, courageous, intelligent, acute, and fair-minded men, 'acting judicially that is to say, acting without a policy', that the question in what school of theoretical ethics they had best be educated seems to fall into the background.

M. S. A.

Bentham's Theory of Fictions. By C. K. OGDEN, London: Kegan Paul, Trench, Trubner & Co., Ltd., 1932. Pp. clii and 156. 12s. 6d.

IN this book pages 1-140 are made up of passages from Jeremy Bentham on *fictions* and the influence of language on thought; pages ix-clii are an introduction by Mr. Ogden to Bentham's work; it contains also an appendix on legal fictions by Bentham, an appendix on the classification of fictions by his nephew, George Bentham, a table of contents and an index.

The passages from Bentham are so arranged by Mr. Ogden as to give us first a general outline of his theory of fictions and then illustrations of that theory in its application to the analysis of motion, substantive and adjective, rights, legal matters, etc. I believe that there is much that is valuable in Bentham's work on fictions and that though much of it has now been said again more clearly (so I think) in terms of incomplete symbols it might well be worth the while of those interested in these matters to read Bentham, especially perhaps what he says about Paraphrasis (see pp. 86-90 of the present work). As a further example of the fact that there is still life in Bentham's work, consider what he says about improbability and impossibility and then remember what Ramsey says (*Foundations of Mathematics*, p. 166) about the former, and what Stout (*MIND*, XLI. (1932), 297) and Langford (*Symbolic Logic*, p. 471) say about the latter.

I still insist that Bentham is seriously muddled as to what he means by 'fiction'. When reading Vaihinger (*The Philosophy of As If*) one gets the impression that he is saying of practically everything that it is a fiction and the conviction that this is not true in one and the same sense of 'fiction'; when reading Bentham one gets, in a lesser degree perhaps, the same impression and the same conviction. But I have explained elsewhere why I think Bentham confused, what those senses of 'fiction' are which I believe him to have confused, and the relations of these to logical constructions and incomplete symbols. Sometimes his language suggests that to say that obligations, for example, are fictitious entities implies that they are fictitious, and sometimes it suggests the contradictory (see Bentham, *Ontology*, Chap. I., Section vi., and p. 17 of the present work). Sometimes his language suggests that when one says "Obligations are fictitious entities", one is saying something about the word 'obligations' and sometimes not.

Mr. Ogden will not allow that Bentham is muddled (pp. li-lxi). This is no place to argue the point. One wishes that Mr. Ogden had set out in his own language just what he thinks Bentham is saying of qualities, motions and obligations when he calls them all fictions. As to my definitions of logical fiction (p. li, footnote) it is very doubtful whether senses II and III exist, and in definition I the word 'genuine' is all-important but unexplained.

Ghosts, surely, are not fictitious entities in Bentham's sense, any more than imaginary persons such as heathen gods, genii and fairies (*Chresto-*

mathia, Appendix, Section xix., footnote). It may be that the ghost complex partly accounts for Bentham's constant tendency to fall back into supposing that fictitious entities are fictitious.

Mr. Ogden follows Bentham in believing that there is a special connexion between fictitious entities and psychology. The Behaviourists and the Physicalists do the same, do they not? Again Mr. Ogden's views, once derided or ignored, are now "plausible". I cannot see the connexion. I must be old-fashioned. Mr. Ogden's account of the new 'critical' philosophy (pp. xlviii, xlix) seems to me very inaccurate.

This book contains I think pretty well all of importance that Bentham said concerning fictions and language. Whether we agree or not with Mr. Ogden's interpretation of what Bentham says on these matters, we ought to congratulate him on having seen its importance and thank him for collecting it for us.

J. WISDOM.

Les Principes de la Logique et la critique Contemporaine. By ARNOLD REYMOND. Paris. Boivin et Cie, 1932. Pp. xi + 279. 25 fr.

THIS book, written from the stand-point of Neo-Thomism, appears to have two closely connected aims, namely, (1) to show that formal logic has an ontological import, (2) to show that the principles of contradiction and excluded middle are as absolute as the principle of identity. In accordance with the logical doctrines of the Thomist School, formal logic is defined as the agreement of thought with itself, applied logic as the agreement of thought with the real. Prof. Reymond states some of the metaphysical postulates upon which this point of view depends. The conception of truth is taken to be fundamental. Prof. Reymond gives two definitions of truth (p. 38, p. 258). It will be sufficient to quote the latter: 'la vérité peut se définir comme une position fonctionnelle de la pensée par rapport à un certain donné, ce qui implique une double réciprocité de la pensée, vis-à-vis d'elle-même et vis-à-vis de son donné, en d'autres termes une participation pour elle à la fois à l'un et à l'être'. Of truth thus conceived God is said to be the foundation. If Prof. Reymond's conception of truth and of formal logic be granted, the ontological significance of formal principles follows. Prof. Reymond's book is addressed to those who are in agreement with these views. They need not be criticised here.

Of more general interest is the discussion of the principle of excluded middle. Chapter VI. deals with this principle in connection with the problem of mathematical proof. In the opinion of the present reviewer Prof. Reymond scarcely does justice to the position of Brouwer, who is concerned rather with the problem of the nature of mathematical existence than with the question as to the validity of a purely formal principle. Prof. Reymond seems to be in the position of Ramsey who was content to assert: 'I cannot persuade myself that I do not know for certain that the Law of Excluded Middle is true'. The student who is unfamiliar with Brouwer's own writings will not be much enlightened by Prof. Reymond's discussion of the finitist (or intuitionist) point of view. Chapter VIII. provides an elementary account of Russell's views, whilst Chapter VII. is mainly concerned with those of Hilbert. There is a useful, classified bibliography.

L. S. S.

Symbolic Distance in Relation to Analogy and Fiction. By S. BUCHANAN, Professor of Philosophy in the University of Virginia. [Psyche Miniatres. General Series.] Kegan Paul, 1932. Pp. 110. 2s. 6d.

IN chapter i., the Analysis of Fictions, it is contended that modern science's deficiency in rhetoric and dialectic "has prevented us from discovering and maintaining proper symbolic distances in our highly specialized sects and cults of thought" (p. 14). The conception of symbolic distance is compared to what might be called perhaps the reflective distance between a mirror image and what it mirrors when a series of mirrors reflect, each with some distortion, the image in a preceding mirror, and thus with more and more distortion the object reflected by the first mirror. A series of maps would be a better analogy, for there is something in sentences which corresponds to scale as well as to distortion.

The theory of symbolic distance is an attempt to introduce into the critique of symbols some of the devices for circumspection and calculation that will correspond to optical theory in the act of astronomical observation (p. 15).

From this point I completely fail to follow the author, and I venture to believe that this is not entirely my fault. The next question is apparently: What is discourse, and how is a sentence used? The views (a) that sentences reveal sections of an adjectival hierarchy, (b) that they exhibit parts of a relational network, are rejected in favour of what is said to be Bentham's view. There follows what seems to me a very misleading account of Bentham's views. Bentham usually means by phraseoclerosis something much more subtle and important than the reduction of metaphors to literal sentences, nor can we describe his work by saying that he (1) tried to point out that metaphor is far more rampant in discourse than is commonly supposed, and (2) provided means for removing it. The rest of the book is the theory of symbolic distance based on the assumption that it is metaphor which gives this distance, and consequently contains first an account (chap. ii.) of what causes metaphorical expression, and then an account (chap. iii.) of how metaphors, including subtle and usually unnoticed ones, are to be removed. I cannot understand these accounts. Even the analogies from the theory of matrices and projective geometry do not enlighten me.

J. WISDOM.

Talents and Temperaments: The Psychology of Vocational Guidance.

By ANGUS MACRAE. London: Nisbet & Co., Ltd. Cambridge: at the University Press, 1932. Pp. xiv + 210. Price 5s. net.

THIS excellent book has been written for parents, teachers, social workers and anyone else who wishes to be told briefly and simply what methods the psychologist employs in vocational guidance and what results he has achieved. The first four chapters deal with the ways in which the psychologist measures intelligence and special abilities, and estimates temperament and character. The fifth and sixth chapters assess the contribution which parents, teachers and doctors can make to vocational guidance. The seventh chapter deals with the analysis of occupational requirements. The eighth chapter shows how the psychologist passes from his examination of a person, and of occupations, to his conclusion about that person's vocational fitness. The ninth chapter describes the various large-scale

investigations which have been carried out in Great Britain in order to test the value of the psychological technique in vocational guidance. And the tenth chapter forecasts a great extension of its scope and usefulness.

Dr. Macrae makes no extravagant claims for the psychologist's methods of vocational guidance. In every chapter he exhibits a cool, dispassionate mind, which seeks to describe things exactly as they are. This, combined with his attractive literary style and his delightful, unobtrusive wit, makes the book a marked success.

REX KNIGHT.

Psychical Research, the Science of the Supernormal. By HANS DRIESCH.

Authorized Translation by THEODORE BESTERMAN. London: G. Bell & Sons, Ltd., 1933. Pp. xvi, 176. 5s. net.

It is sufficiently rare for a philosopher of the first rank to concern himself with anything so concrete and so replete with human interest as psychical research, for this little Introduction to the subject to deserve a hearty welcome. Moreover, Sir Oliver Lodge has prefaced it with a short introduction, in which he shows himself a little doubtful whether Prof. Driesch's caution will succeed either in "stimulating his brother scientists" or in attracting the spiritualists; but it is really quite a good and useful little book. Its plan is to discuss first the problem of method and the manifold possibilities of deception, next the 'higher problems', with a classification of the alleged phenomena and decisions as to which of them may, in Prof. Driesch's opinion, be taken as 'established facts', and finally the 'theories' of psychical research in their application to 'paraphysical' and 'parapsychical' phenomena. It is particularly in this last part that Prof. Driesch's discussion is valuable and should clear the air. He classifies the possible theories as the hypotheses of 'radiation', 'animism', 'exteriorisation', 'cosmic consciousness', and 'monadism', as he prefers to call spiritism (spiritualism), in order to avoid, as he says, the suggestion of alcoholism. The issue is finally narrowed down to a choice between the last two. Prof. Driesch, however, cautiously declines to decide between them, though he admits that "the monadic theory is to some extent preferable" (p. 162, cf. pp. 164, 136). For this preference two excellent reasons are given (p. 158). The spiritist interpretation alone explains "two quite definite characteristics" of practically all the evidence; "it is *selectively limited*, and it is *personificatory*". Prof. Driesch also administers a timely rebuke to academic philosophy when he declares (p. 160) "the question of personal survival remains the prime problem of all science, even though nearly all our 'official' philosophers and psychologists carefully pretend not to see it".

To the present reviewer it affords much gratification that Prof. Driesch should have chosen to emphasize the very same features about the evidence which he himself pointed out over forty years ago in reporting a curious case of automatic writing to the S.P.R. It surely is a psychological fact of some significance that psychic phenomena tend to assume the form of communications from personal 'spirits', whether the medium (whom Prof. Driesch, with a shocking contempt for Greek etymology, prefers to call the 'metagnome'!) favours the spiritist interpretation or not; and it is a logical fact of great significance that even when the contents of the communications have all been traced to latent knowledge in the medium or the sitters, nothing has been done to account for a selection that often strikingly

simulates a spiritual entity. On the other hand, Prof. Driesch's attempts to assimilate the method of psychical research to the traditional account of scientific method in less contentious fields do not seem entirely successful. Occam's Razor, the methodological principle *pluralitas non est ponenda praeter necessitatem*, is (as usual) misquoted and turned into a metaphysical maxim, *entia non sunt creanda praeter necessitatem* (p. 63), and subsequently figures as "the law of economy of hypothesis" (p. 81): but is not this a plain misuse of 'law'? And can any principle of method restrict the consideration of as many hypotheses as may be required for exploring a subject? Again, is it not both scientifically rash and logically unsound to speak of "established facts" (p. 99) in psychical research? Has not modern science renounced the old ideal of absolute fact in favour of facts-in-the-light-of-the-science-of-the-day-and-capable-of-indefinite-improvement—as Prof. Driesch seems to see on page 175?

The truth is rather that the study of psychical research, so far from resting on the support of an antiquated logic, throws much light on the actual working of scientific method. Like other *nascent* sciences it reveals that, initially, scientific 'principles' are matters of choice, and that we have to select our working hypotheses, while all our 'facts' are relative to these. Being, moreover, a highly emotional subject, which lends itself to the bitter clash of opposite forms of bias, it beautifully reveals the potency of bias and its power to hold up the decision of scientific questions. Here the 'facts' seem powerless, and the contending parties cannot agree upon them. Nor does there seem to be any hope of progress until some degree of *experimental control* over the phenomena has been secured. For only by continual repetition of experiments can a bigoted and hostile bias be gradually worn down.

F. C. S. SCHILLER.

La Filosofia dell'Esperienza di Davide Hume. By GALVANO DELLA VOLPE.
Florence: Sansoni, 1933. Pp. ix + 191. Lire 30.

THIS book confines itself to an exposition of the epistemological sections of the *Treatise*, rightly preferred to the *Inquiry*. It is to be followed by a study of Hume's ethical, political, religious, and historiographical views. Hume's points, very competently interpreted from the original text, are traced out with some minuteness, and every step is accompanied by a liberality of quotation from the *Treatise* which, though tedious for us, will probably be welcomed by Italian readers, who are presumably less familiar with the text than we are. The notes show that the author is acquainted with the best recent studies of Hume, for example, those of Hendel, Kemp Smith and Metz; the absence of any reference to Green is doubtless due to Signor della Volpe's abstention from the task of absolute evaluation. As an exposition it is probably the most intimate and understanding, as well as the most detailed, in Italian. Since there is no need here to take up the points one by one, it will be sufficient to indicate the general view.

Signor della Volpe wishes to destroy the common opinion that Hume was a sceptic. He blames Kant for the spread of this opinion. In this country we should adduce Reid instead, and excuse Reid at any rate to the extent that he was taking Hume at his word. But della Volpe has a somewhat rigorous conception of what scepticism is, a conception which he nowhere defines but which, I gather, not only makes the denial of any kind of truth central but also treats the *εποχή* as an initial as well as a ter-

minal attitude. That Hume was not a sceptic in this sense most students would readily agree. What most of us mean by calling him a sceptic is his denial of the possibility of knowing anything except ideas interpreted subjectively *taken along with* his affirmation that nevertheless we cannot help believing in and framing critical ideas about an external world. Reduced to its simplest terms, Signor della Volpe's contention is that the affirmative side is what saves Hume from scepticism. The contention would be right only if the affirmation, like the negation, had been argued by Hume instead of being merely asserted. When you have shown that our fundamental beliefs are without rational grounds, you cannot, quâ philosopher, simply affirm that nevertheless we cannot help retaining the rationally discredited beliefs. The *quid juris* question arises here. Hume did not treat this question. If he simply avoided it, he may have been imposing an excusable limit to his task, but the evident relish with which he spoke of the antinomy of reason and belief suggests instead that he had proved what he had wanted to prove—and in any case it is not the part of a philosopher to flourish an unresolved aporia, especially one so deep as this. If, on the other hand, he denied that the question had any meaning, he was surely a sceptic. To call his system, as Signor della Volpe does, dogmatism of feeling is to apply a philosophical label to that part of Hume which was not philosophical at all, namely, to the undeveloped assertion that whatever we think of certain beliefs we can't help holding them. Della Volpe is on firmer ground when he speaks of Hume's phenomenalism, of his service in initiating that "new phase of modern subjectivism" which consists in separating experience from any presumed unexperienceable conditions and studying its articulations for their own sake. In elaborating this aspect of Hume, the author has competently laid before us an independent rethinking of a viewpoint which has latterly been gaining ground in England and America.

T. E. JESSOP.

Der Kampf um den Lebenssinn unter den Vorläufern der modernen Ethik.

By DAVID BAUMGARDT. Leipzig, Felix Meiner. Pp. xi, 384. M. 15.

THIS book impresses the reader as a fragment of a larger whole. Not only is its method largely historical and does it cover only a short section of ethical history in Germany in the latter part of the eighteenth century and promise continuations in further volumes; but it seems to presuppose accounts of its author's conception of ethics and of the relations of that topic to human psychology, human society, and the other human values. It will be interesting to watch the unfolding of what is evidently designed to be a complete ethical system, but as yet it is premature to speculate about its character from the indications so far given by Prof. Baumgardt.

Actually, the book sets out from Kant, to whom and his interpreters (mostly German, though Henry Sidgwick also receives repeated and laudatory mention) considerably more than half of the work is devoted. Prof. Baumgardt subjects them to a detailed and documented criticism, which is apparently directed to showing that Kantian ethics could, and should, have aimed at applying to ethics the transcendental method of the *Critique of Pure Reason*. He recognizes, however, that Kant did not attempt to do this; nor does he indicate how in his opinion it could have been done. To get sense and consistency into Kant by the arts of exegesis is a desperate undertaking, and by this time the futility of such attempts

should be sufficiently clear to absolve from them commentators who are not committed to working on the very largest scale. Hence, one wonders whether the inadequacies and contradictions of Kantian ethics were deserving of such patient and loving exposition. It would surely have been preferable and more instructive to raise a few fresh questions, as, *e.g.*, why Kant *wanted* to eviscerate his ethics of all concrete contents, and why his very fairly successful attempt to do so was received with such enormous applause by other academic moralists.

The latter part of the book, which deals with the opponents of ethical rationalism at the close of the eighteenth century, traverses less familiar ground. It discusses the criticism of Kantian ethics by Herder (1744-1803), F. Hemsterhuis (1722-90), and F. H. Jacobi (1743-1819), and their attempts to base morals on feeling and intuition. That Herder anticipated not only Hegel but even Jacobi in his protests against the emptiness of Kant's moral law and against the impossibility of applying it is well brought out (p. 250), while some evidence is adduced for holding that Jacobi may have to be counted among the forerunners of pragmatism. At any rate, the dicta that "experience and history show that the acts of a man depend far less on his thinking than his thinking depends on his acts" (p. 326), and that action is to be placed above all talking and thinking (p. 328), appear *prima facie* to have a good claim to figure in the pedigree of pragmatism. Before, however, the issue between Kant and his early critics is simplified into a conflict between rationalism and irrationalism it should be remembered that a rejection of rationalism is by no means necessarily equivalent to a rejection of rationality, and that Kant's writings contain plenty of material out of which a voluntaristic and pragmatic version of Kant may be constructed. Such interpretations no doubt will not be able to utilize all Kant's assertions; but then has there ever been an interpretation that could?

F. C. S. SCHILLER.

Arturo Schopenhauer. L'ambiente, la vita, le opere. By UMBERTO A. PADOVANI, Professor of the Philosophy of Religion in the University of the Sacred Heart, Milan. Milan: Società Editrice Vita e Pensiero. 1934. Pp. x + 214. Lire 15.

PROF. PADOVANI'S volume is the first of a projected trilogy. The second is to contain an exposition of Schopenhauer's philosophy, regarded as a statement and attempted solution of the problem of evil, and the third is to examine the chief historical solutions of this problem with a view to exhibiting the superiority of the Thomist answer. The present volume claims to supply the historical data for the preliminary understanding of Schopenhauer. It includes an account of the mental environment, of his sources, his life and character, his works, and his chief followers. It is curiously selective, especially in the biographical section. His expulsion from Gotha in his late teens and a hundred other instances of his disagreeableness are not mentioned; his refusal to concede a penny to the creditors when the firm that held his patrimony went bankrupt, and all his later parcimony, are sentimentally idealised; his long rupture with his mother is not squarely judged, and his negligence of his fond sister is scarcely hinted at. His just reputation for vanity is rejected by bland denial. His detestation of his fellow-countrymen and of everything German is raised, again by mere assertion, above all conceit and misanthropy to pure cos-

mopolitanism, and his crude hatred of professional philosophers is depicted as righteous indignation. It is admitted, but only casually, that he was a hypochondriac, troubled by phobias, but the range and extremity of these are left unnoticed, and their effect on his life as well as their connection with his pessimism is reduced to a negligible minimum. It is even asserted that he had a sound constitution. The author naturally concludes that Schopenhauer's pessimism was objective, based on veridical perception of the evils of existence, scarcely influenced by his emotional peculiarities—objective surely, since his material circumstances were throughout unusually favourable! Seeing that this is tantamount to saying that his life was irrelevant to his philosophy, it is hard to see why nearly a third of this volume, which is devoted to "the various historical matters necessary to the full understanding of Schopenhauer's thought", should be biographical. The other sections do not lend themselves to short notice. Professor Padovani gives us often an indication of the view he is to expound in the next volume—the chief note of modern civilisation is its unqualified optimism (Hegel being its most downright exponent), the value of Schopenhauer lying in his criticism of this and of the accompanying rationalism and humanism (this-worldliness), and his error lying in his making his pessimism absolute, in his failure to pass beyond that *contemptio mundi* which Roman Christianity (not Protestantism), while vehemently asserting it, has always balanced with the conception of a transcendent world of perfection. The thesis is interesting, but unless its development is freed not only from selective biographical interpretation but from the entirely confessional tone and presuppositions of this volume, the second volume is not likely to command the attention of professional philosophers outside Romanist circles.

T. E. JESSOP.

The Nature of History. By Sir HENRY LAMBERT, K.C.M.G., C.B., F.S.A.
University Press, Oxford; Humphrey Milford, London, 1933. Pp.
viii, 94. 5s. net.

IN eight short chapters, on the Development of Historical Writing, Historians' Views of History, Is History (Narrative or Institutional) a Science? Is Certainty Attainable, and Impartiality Possible in History? and the Value of History, this sensible and pleasantly written little essay reaches, a little regretfully, the conclusion that history is *not* a science. But it is, Sir Henry Lambert thinks, something better. History is not a science, because it does not attain to the finality and certainty which he takes to be the marks of science (p. 83), it shares its unscientific character with "most of the accumulated wisdom which guides the action of men", and "reproducing for us the past experience of our race, is one of the most valuable, the most humanizing, the fullest of wisdom, of all our studies" (p. 84).

Sir Henry Lambert's conclusion, as he himself sees (p. 25), evidently presupposes the correctness of his conception both of history and of science. But while the former cannot be questioned, the latter seems to make claims for science which modern science is continually disavowing.

For example, it is doubtless true that history formulates no 'laws'; but would science do this but for its desire to predict? To a modern science a 'law', though it may be an objective habit in things, is essentially a device the inquirer uses in order to predict historical events. Its 'immutability' is scoffed at; the more rapidly a science changes its

'laws', the more progressive it is held to be. Its 'certainty' has been reduced to probability, and even that of mathematics is admitted to be hypothetical, and derivative from the value of the initial definitions of the system in which the 'certainty' occurs. Doubtless (p. 32) there are no experiments and no verifications in history, because there is no repetition (p. 64): but does not a science which relies on verification *ipso facto* renounce the ideal of cogent *proof*? Doubtless the course of history seems to depend on choices and contingencies; but is not the predictability of physical events due to the stability of statistical averages, and is not even physics being forced just now to reduce determinism from a 'law' (of the old kind) to a methodological assumption? No doubt the scientific 'law' has seemed to abstract from time; but has not science now repented of this abstraction? Certainly one of the novelties of Relativity is to take time as a 'fourth dimension' of space, *i.e.*, to take the history of physical entities into account, and to study their 'world-line'. It is plain that the historian, consciously or unconsciously, passes value-judgments; but is not the scientist's judgment that certain phenomena are 'real' and others not, a value-judgment also, slightly veiled? And finally, it should always be remembered that historical testimony underlies all scientific fact. Every fact in every science has had a history that led to its discovery, from the bath of Archimedes to the Loch Ness monster: and if that celebrity ever passes from journalism to zoology and acquires scientific name and standing, it will be because Commander Gould's band of witnesses have stimulated to successful efforts to house him in a museum or aquarium! If then the necessary modifications are introduced into the old conception of 'science', it ceases to be obvious that science can have no truck with history.

F. C. S. SCHILLER.

East and West in Religion. By G. RADHAKRISHNAN. London: George Allen & Unwin, 1933. Pp. 146. 4s. 6d.

THE essential function of Radhakrishnan in philosophy would seem to be, as Mr. Joad has recently described it, that of a 'liaison officer' between East and West. It is certainly in that character that he appears in the present little book. It is, as he explains (p. 13), a contribution to Comparative Religion and, more particularly, it is an attempt to bring out some of the main points of resemblance and contrast between the religious attitudes that are specially characteristic of India and Europe respectively. He notes (p. 46) that 'among living religions . . . there is none which has a Western origin. They have all been cradled in India, Iran or Palestine'. 'Christianity is an Eastern religion, transplanted into the West, where it acquired forms characteristic of the Western mind'. 'While Hinduism and Buddhism may be regarded as typically Eastern—Christianity may be taken as the type of the Western religion. For it is a law of life that religions like other things, take on the nature of the organisms which assimilate them. The distinction between the pure and simple teaching of Jesus and the development Christianity assumed in the West is a striking illustration of the difference between the Eastern and the Western attitude to religion.' 'Speaking in general terms, we may say that the dominant feature of Eastern thought is its insistence on creative intuition, while the Western systems are characterized by a greater adherence to critical intelligence.' For further emphasis on this antithesis, Radhakrishnan

refers to his book on *An Idealist View of Life*, chap. iv. His great aim in the present book is to emphasize the importance of mutual understanding between East and West. 'While the course of religion', he says (p. 68), 'ran from East to West, the course of theology ran in an opposite direction. The intellectual religion of the West with its love of law, order and definition, has its striking virtues as well as its defects, even as the intuitive religion of the East has. The one brings to the common stock prudence, knowledge and discipline; the other freedom, originality and courage. The meeting of the two to-day may pave the way for a firm spiritual unity, if mutual appreciation takes the place of cold criticism and patronizing judgment. . . . The very love of man requires us to appreciate other people's beliefs, a feature in which the Eastern faiths are superior to the Western.'

Radhakrishnan concludes this book by giving a summary of the point of view of the poet Rabindranath Tagore, whom he regards as having given a particularly well-balanced expression to an outlook on life that combines the spirituality of the East with the larger humanity which may be regarded as the special contribution of the West. I suppose we may find such a comprehensive humanism for ourselves in the works of Shakespeare, Goethe and others; or we may seek it in an Ethical Church, which seeks to combine freedom in speculation with rigorous moral purpose. I believe it is true to say that many modern churches are tending to move in a similar direction.

Though the present book is a small one, it seems to me to contain a great deal of mature wisdom, expressed with admirable clearness. No intelligent reader can fail to understand the writer; and few who understand him will fail to agree with him.

J. S. MACKENZIE.

The Challenge of Humanism: An Essay in Comparative Criticism. By LOUIS J. A. MERCIER. New York: Oxford University Press, 1933. Pp. vi, 288. 10s. 6d. net.

ASSUREDLY humanism is a good word; wherefore, in accordance with philosophic custom in treating technical terms, it has been much misused. It was hardly to be expected that it should remain pinned down to the literary movement to which it was attached during the Renaissance by what was little more than a historical accident: but those who wanted to use the word in senses of their own might fairly be required to state their reasons and to distinguish themselves clearly from others who also coveted the term. This, accordingly, was what I did in 1903 when, appealing to Protagoras, I practically inaugurated the philosophic employment of humanism as the description of a distinctive attitude in epistemology which regarded knowledge as an essentially human affair, and was opposed both to naturalism and to absolutism. But since then, and in growing measure, these precautions have been neglected. Humanisms have increased and multiplied, until in America at least six or seven brands are current. Subsequently to the time mentioned, Prof. J. S. Mackenzie in 1905 appropriated the name for his sort of Absolutism, and he was followed later by Viscount Haldane. About 1910 a number of Unitarian clerics, having lost their god, decided to call themselves 'new humanists' rather than 'positivists', and their procedure a 'new religion'. This contribution to pastoral atheology is probably the commonest meaning of the term in America at

present. Three or four years ago, however, a Mr. Samson overtrumped them by writing a second *New Humanism* which was a wholly irreligious philosophy of Bolshevism: it was duly reviewed in *MIND* for April, 1931. About the same time, Prof. O. L. Reiser produced a *Humanistic Logic*, meaning no more, apparently, than that his wife had taken an interest in the composition of his book. Lastly, there is the 'New Humanism' of Professors Irving Babbitt and Elmer More, of which Mr. Mercier constitutes himself the *buccinator*. Clearly there is dire need for sharp distinctions, if the public is not to get lost in a fog!

Unfortunately, these and formal definitions are not Mr. Mercier's *forte*. He would seem to be a zealous Catholic (French, Belgian, or Canadian), who has not been trained as a philosopher, but has sat at the feet of Prof. Irving Babbitt in the department of French at Harvard. He has heard only of the Renaissance humanism, so far as it flourished in France (not in Italy, Germany or the Netherlands), and of the Unitarian 'new religion', of which he naturally disapproves. But he might be pardoned his ignorance if he could only expound clearly and intelligibly the humanism which he champions. As it is, I fear this is more than can honestly be said.

F. C. S. SCHILLER.

Is There a Universe? The Negative Argument. By DAVID BLAIR McLACHLAN. The Golden Vista Press, London, n.d. Pp. 94. 2s. 6d.

It is one of the drawbacks of the philosophic foible of using purely intellectual conceptions, like the Universe or the Absolute, in a eulogistic way that they may deceive the unwary into imagining them to be intrinsically valuable. Such apparently has been the fate of the writer of this crude but vigorous pamphlet. He has been disappointed to discover that the term 'universe' is not, as such, any guarantee of any 'organic unity' or superior value of the real, but that in fact "the universe is a jumble of things without form or order except in parts" (p. 7). He has adopted therefore a system of pluralistic 'Monadism', according to which the universe is a unity "only in the grammatical sense, like crowd, cargo, forest. It is a shapeless multitude, in parts coherent and organised, but on the whole promiscuous and chaotic. There is no suggestion of harmony, synthesis or single design in the disposition of the stars. . . . They are strewn about anyhow just where they happened to be formed. . . . It would be better to call the untidy litter of things the *Multiverse*." (p. 16). He expounds this philosophy in a picturesque but aphoristic style which not infrequently recalls some of the wilder assertions in Hegel's *Naturphilosophie*. Thus the planets are "the sun's *putting-stones*," and the moon is the earth's (p. 20). In chaps. iv. and v. Mr. McLachlan regards dreams as revealing what he calls the Middle and the Etherial State; but he does not (as he might, and should) explicitly use them against the unity of the universe. The story of St. Columba and St. Oran (p. 29) is, however, excellent.

F. C. S. SCHILLER.

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VIII.—PHILOSOPHICAL PERIODICALS

JOURNAL OF PHILOSOPHY. xxx. (1933), 22. **A. O. Lovejoy.** 'Dualism and the Paradox of Reference.' [A long and detailed reply to C. A. Strong's criticism in xxix., 24.] xxx., 23. **D. C. Williams.** 'The Innocence of the Given.' ["The given is as such mere fact, innocent of self-knowledge, to be known, if at all, indirectly, inductively, and inconclusively." Its 'innocence' is also 'inscrutability', and it is "neither equivalent nor necessary nor sufficient to knowledge about" a thing. The conclusion is "that we *construct our beliefs* is the safest of all beliefs which a mind can construct. But that there is an obdurate world of nature to which successful beliefs must conform seems to me also a very proper and workmanlike belief, while to construct the contrary belief that in constructing its beliefs the mind is constructing the world seems to me a ruinous defiance of all the laws of the art."] xxx., 24. **K. Schmidt.** 'Studies in the Structure of Systems.' [Compares the two traditional theories of Definition, the nominalist and the ontological which professed to state the 'essence' of a thing, and points out that even the latter was intended to be used in a deductive system. So what is really important about a definition is that it should state, "a system of conditions by which a *new entity* is introduced into a system." A definition is "a system of initial conditions" and what is 'indefinable' is relative to the system, and a matter of choice. Thus the definition approximates to the postulate, and *good* defining becomes a responsible operation.] **F. C. S. Schiller.** 'Is Idealism incurably ambiguous?' [Points out apropos of the discussion between Profs. Pratt, Barrett and Brightman in xxx. 6 and 15, that there are not merely *four* sorts of 'Idealism' but at least *twelve*, all derivable from the Humanist or Protagorean *Man is the Measure*, which is "both logically and chronologically the most comprehensive and complete" idealism. It is "the most thoroughgoing affirmation of the philosophic importance of man, which bears in its bosom all the later idealisms as partial, one-sided and more or less misconstrued developments" produced by various 'restrictions'. Of course all these twelve sorts should be given distinctive names, in default of which the word 'idealism' must be regarded as incurably ambiguous and dropped as "mischievous and unscientific."] xxx. 25. **J. B. Pratt.** 'What is Speculative Idealism?' [Pursues the research into what idealists mean by 'speculative idealism,' and comments on Barrett's article in xxx., 15. Speculative idealism is convicted of becoming indistinguishable from naturalism in one interpretation and lapsing into 'mentalism' in others: actually its advocates oscillate. The conclusion is "Speculative idealism is a metaphysical theory about the unity of the cosmos. On this cosmic problem there are four or five familiar hypotheses." The most probable interpretation of speculative idealism is "a world full of situations and events which *look* as if they had been purposed though they really were not; a world that *seems* to respect values, though as a fact this semblance is entirely inexplicable. It is the hypothesis that things are as if there were a God, but there isn't. I wonder if this is

what speculative idealism really comes to. If it is none of these five theories, what is it? Will somebody tell me?" It may be predicted that there will be no rush to answer Prof. Pratt.] **A. C. Armstrong.** 'Hegel's Attitude on War and Peace.' [Points out that Hegel's political philosophy, though ambiguous, regarded a federation of states and perpetual peace as mere dreams, and even as undesirable. He also denies that politics and morals are related. "In sum, Hegel was less averse to war than his predecessors, Kant and Fichte, and much less favourable than they to the endeavour to establish permanent peace. Further, war is involved, logically and in fact, in his political philosophy."]

PROCEEDINGS OF THE ARISTOTELIAN SOCIETY, 1932-33. N.S. Vol. xxxiii. **L. J. Russell.** Presidential Address: 'Fact and Form.' [A consideration of certain parallelisms between the work of the man of science and that of the artist. The following sentence will indicate the kind of comparison drawn: 'In pure science and in pure art we have activities in which man does violence to what he could be said simply to find in nature, and creates new wholes in an expressive medium under the guidance in the one case of intellectual, in the other case of emotional delight.'] It will be convenient to alter the order of the papers slightly so as to bring together those which deal with the same general topic. **A. H. Hannay.** 'Realistic Basis of Contemporary Aesthetics.' [A criticism of the realistic doctrines in aesthetics which divorce aesthetic qualities from æsthetic feeling and lay all the stress on design or 'architecture.' Ordinary vision is itself emotional and imaginative, and æsthetic vision is only an intensification and purification of ordinary vision.] **T. E. Jessop.** 'The Definition of Beauty.' [The first part of the paper is a protest against a psychological bias in aesthetics, i.e., an undue stress on creation and appreciation as contrasted with the work of art itself. The main point in the second part is a distinction between sensory beauty (e.g., in painting) and 'ideo-sensory' beauty (e.g., in literature).] **L. S. Stebbing.** 'The Method of Analysis in Metaphysics.' [An attempt to determine the presuppositions of the method of analysis as used by Russell, Moore, and others. Miss Stebbing is of opinion that the time for philosophical construction has not yet come, and she apparently regards systems constructed before the era of 'analysis' as metaphysically negligible, though to some of them she concedes a value as works of art.] **M. Black.** 'Philosophical Analysis.' [Deals first and mainly with logical analysis considered as a method for elucidating the structure of systems of symbols or 'languages', and secondly argues briefly, against Miss Stebbing, that 'metaphysical analysis coincides with logical analysis, is concerned with the structure of sentences rather than with facts, and needs no metaphysical presuppositions to ensure its practicability.'] **R. Jackson.** 'The Conventional Basis of Meaning.' [A lengthy discussion of the nature of linguistic symbols.] **N. Isaacs.** 'The Logic of Language.' [A plea for a psychological study of the actual mode of working of language in the mind. Logical analysis, the writer thinks, goes to work without a sufficient recognition of the complexities of the way in which 'meaning-formations' grow up. The argument is illustrated by an analysis of the meanings of the words 'know' and 'knowledge.'] **Sir Mohammed Iqbal.** 'Is Religion Possible?' [States the writer's views about the nature of religious experience.] **A. C. Ewing.** 'A Defence of Causality.' [A well-argued criticism of the view that causality is no more than a factual or observed regularity of sequence.] **R. B. Braithwaite.** 'The Nature of Believing.' [Analyses belief into

(1) entertainment of a proposition, together with (2) a disposition to act as if the proposition were true—a revival of Bain's unsatisfactory doctrine.] **E. S. Russell.** 'The Limitations of Analysis in Biology.' [Argues that, if the organism is not a mere sum of parts, a method of analysis which isolates the parts can be of only limited validity. The biologist must start with 'the activity of the organism as a whole.'] **R. I. Aaron.** 'Locke's Theory of Universals.' [Tries to show that there is more in Locke's view of universals than is suggested by Berkeley's criticism. In the later part of the paper it is contended that Locke came to believe that universals may be *given* in sensory experience, and that this belief gives the key to the relation between Bks. II. and IV. of the *Essay*.] **A. A. Bowman.** 'Spirit-Time.' [A long paper, difficult to summarise. The writer's 'contention is that the time of spiritual being has certain unique characteristics which differentiate it from time in general and from the time of the physical world in particular.' In spirit-time there is not merely a succession of experiences, but an experience of succession in which the experiences are no longer characterised by mere externality to each other. There is both a retroaction, a 'power of the present to modify the past of spiritual being,' and a prolepsis, a modification of the present 'by the fact that it anticipates its own future.'] **J. W. Scott.** 'The Independence of the Objective.' ['The universe in its felt opposition to me and my efforts is only intelligible if it is itself an energising, with which my own energising can be in step or not.']

ARISTOTELIAN SOCIETY, SUPPLEMENTARY VOLUME XII., 1933: CREATIVITY, POLITICS AND THE 'A PRIORI'. **L. J. Russell.** Inaugural Address: 'Substance and Process.' [An interesting paper in which the relation between substance and process is discussed. Russell argues (1) that change affects substance and not merely its characters, (2) that in the case of human beings at any rate an element of indetermination or creativity is present. The paper is confessedly tentative, but one would have expected some discussion of the difficulties involved in the second contention.] **G. Ryle, R. B. Braithwaite, G. E. Moore.** Symposium: 'Imaginary Objects.' [A discussion of a kind which has been made fashionable by certain Cambridge philosophers, but in which questions of substance seem to disappear behind a cloud of more or less verbal disputation. As Braithwaite says he is in complete agreement with Ryle's main contentions, it may perhaps suffice to take one of these as a sample: Dickens's statements about Pickwick, we are told, 'are not true or false of a Mr. Pickwick. They pretend to be true of a Mr. Pickwick, but, as there was no such man, they are not true or even false of a man of that description.' Moore is on the side of common sense in rejecting this contention; he holds that the phrase that Dickens's statements are about Pickwick is 'perfectly good natural English for something which *is* true,' but what this true something is, is not further explained.] **A. Boyce Gibson, C. R. Morris, G. E. G. Catlin.** Symposium: 'What can Philosophy contribute to the study of Politics?' [Boyce Gibson's ideal of political theory is a modified 'rationalism' in which more stress is laid on the will, reason, and passions of individuals than is done in a theory of the Hegelian type. This stress on a teleological interpretation of human nature involves a general philosophy. Morris discusses the rather different question of the relation of political theory to moral philosophy, and argues that the student of politics must have some kind of view about the good life if he is to deal satisfactorily, *e.g.*, with notions like liberty. Catlin's paper is violently opposed to the other two.

He would draw a sharp distinction between political science and ethical philosophy, and even as regards the latter is so distrustful of ethical dogmas that he would object to 'any attempt to mould the State' in accordance with them. He seems not to have the least suspicion that, when he himself talks of the 'natural laws of politics and human psychology,' he is making questionable assumptions.] **F. C. S. Schiller, C. A. Mace, J. L. Stocks.** Symposium: 'Must Philosophers Disagree?' [Schiller argues that the sciences can reach agreement because they deliberately abstract from personal differences, whereas philosophy, by the very nature of its task, is precluded from making such abstractions. Naturally, then, personal differences do influence philosophy very much; even more, indeed, than they need do if their influence was openly recognised. Mace may be said to content himself with the rather too simple dilemma, that if philosophers have the same data before them they should not disagree, while if they have different data they cannot disagree. Stocks accepts Schiller's view that agreement in science depends upon abstraction, but seems to think that philosophers must disagree because each is trying to give his own interpretation of the world as an individual whole. But why should not two or more philosophers arrive separately at very similar interpretations?] **H. F. Hallett, L. S. Stebbing, J. H. Muirhead.** Symposium: 'The *A Priori*.' [This last symposium can hardly be regarded as a happy experiment. The first two writers 'speak different languages,' as Miss Stebbing puts it. Hallett, after dealing at some length with the historical usages of the term '*a priori*,' devotes the main part of his paper to an exposition of 'the account of the argument from the nature of knowledge to the nature of its essential object adumbrated by Descartes, and perfected by Spinoza'; he concludes with a brief statement about the *a posteriori* elements in human knowledge. The argument is sometimes obscure, and advances with a confidence which the reader may not always share. Miss Stebbing first expresses her thorough dissatisfaction with the first paper, then starts quite afresh and states the view about the *a priori* which she accepts, *viz.*, that *a priori* propositions are to be sharply contrasted with empirical propositions and are not concerned with the real at all. Muirhead's task might well have seemed a hopeless one, but he makes a valiant effort to pull the discussion together, deals sympathetically with both papers, and endeavours to find some common ground on which argument can once more be joined.]

REVUE DE MÉTAPHYSIQUE ET DE MORALE, 39^e Année. No. 3, Juillet-Septembre, 1932. **R. Berthelot.** *L'Astrobiologie et la pensée de l'Asie: Essai sur les origines des sciences et des théories morales.* [This first instalment characterises astro-biology as an intermediate stage in the development of human thought about the world between savage animism and modern science, thus occupying the place assigned to metaphysics in Comte's scheme. Astro-biology is a combination of belief in astronomical law and in an animistic, or vitalistic, interpretation of all phenomena. As developed by the ancient Chaldeans, it predicates life of the heavenly bodies, but at the same time seeks to formulate laws of their revolutions and movements and of their influence upon terrestrial events. Even the birth of prodigies and monstrosities is held to be indicative of astral influences. Before astro-biology came the savage world-view: a mixture of animism and generalised vitalism. The latter might emphasise either animal- or plant-analogies, according to the pastoral or agricultural economy of a people. Thus, *e.g.*, cremation of the dead belongs to the "zoomorph"

variety of this vitalistic animism, for it implies the separability of soul from body, whereas burial belongs to the "phytomorph" variety, for it suggests the resurrection of the plant from its seed. The advance to astrology came in connection with the development of agriculture which led to the recognition of the periodicity of the seasons and the setting up of a systematic calendar, based on the ordered movements of the stars.] **J. Joergensen.** *Remarques sur les principales implications métaphysiques des théories et des idées récentes de la physique.* [Begins with a summary account of the history of the theory of Relativity, but the only "metaphysical" implication which (so far as I can find) the author succeeds in squeezing out is that the General Theory of Fields of Force effects an inclusive synthesis of all known kinds of physical phenomena, such as a philosophy of Nature must always seek. The discussion of the quantum theory is metaphysically more fruitful, because of the problem it raises concerning determinism and indeterminism, causal v. statistical laws. The author inclines to the view that the so-called indeterminism is due to the fact that our methods of observation in the "micro-physical" field cannot but disturb the phenomena to be observed. He urges that in physics it is often possible to use both statistical and causal laws (differential equations), and that wave-mechanics and quantum-mechanics may be complementary views of the same physical fact, each of them abstract in a different way, as Dirac has suggested. He also urges that the interference of methods of observation with the phenomenon to be observed does not make that phenomenon "subjective"; for the instruments and methods of observation are themselves physical and as "objective" as the phenomenon which they disturb. He concludes with the hope that the future may bring a reconciliation of the present conflict of theories in physics.] **M. Souriau.** *Qu'est ce qu'une philosophie chrétienne?* [A critical reply to Bréhier's article in vol. 38, no. 2, of the *Revue*, denying that there is, or can be, such a thing as a "Christian" philosophy. The author sums up Bréhier's view as follows: So-called "Christian" philosophies are derived from Greek thought in so far as they are philosophies, and in so far as they are Christian they are not philosophies. In short, modern philosophy is continuous with Greek philosophy and so-called Christian philosophy is non-existent. In reply, the author argues (1) that, for all its historical continuity, philosophy, exhibits three distinguishable periods, each with its own individuality; and that the distinguishing characteristic of the mediæval period is precisely its effort to effect a fusion of Greek and Christian elements; (2) that Christian philosophy is undeniably double-sided, exhibiting a rational and a religious aspect; (3) that Greek philosophy, too, had its religious side; and (4) he analyses in some detail the thought of St. Augustine, in order to show that it deserves to be called a "Christian" philosophy. He claims for Augustinianism that it can be traced in straight line through thinkers like Anselm, Roger Bacon, Occam, Descartes, Pascal, Malebranche down to Kant, in clear distinction from the Aristotelianism of St. Thomas, and the Pantheism of Hegel.] *Études Critiques.* **D. Parodi.** "*Le cheminement de la pensée*" selon M. Émile Meyerson. [After a careful and detailed resumé of Meyerson's book, there follow some critical sections in which attention is drawn to the change of view on Meyerson's part concerning the nature of time; to difficulties in his treatment of cause and ground; and the suggestion is put forward that negation is no less fundamental and essential in thought than the act of identification, which Meyerson puts forward as the fundamental act of thought.] **A. Bloch.** *L'enseignement philosophique et la réforme scolaire de demain.* [As is well-

known, the curriculum of French High Schools includes elementary courses in philosophy. The author criticises the courses at present provided and puts forward a sample programme of the ground which such a course should cover.] Supplément. New Books, French and Foreign. Periodicals.

No. 4, Octobre-Décembre, 1932. **L. Robinson.** *L'immortalité spinoziste.* [Though the title of this article leads one to expect merely a discussion of Spinoza's theory of immortality, the chief topic is actually the part played by reason in Spinoza's second stage, or degree, of knowledge. The function of reason is to mediate between sense-perception and intuitive science by having its origin in the former, whilst supplying the basis for the latter. Its special contribution is to apprehend the *omnibus communia* which differ alike from the *singularia* of sense-perception and the *essentiae aeternae* of intuitive science. These *omnibus communia* which are the special objects of reason, are features common to things which differ widely in essence, e.g., in bodies, extension, movement, rest, and, in general, the so-called "primary qualities", may serve to illustrate *communia*. Reason apprehends these *communia* "sub quadam specie aeternitatis", which does not mean "from the point of view of eternity" or "under the aspect of eternity", but "under a certain image of eternity" (*simulacre d'éternité*) i.e., as manifesting eternity in a certain way. Examples of apprehension *sub quadam specie aeternitatis* are the apprehension by reason of the necessity in all things, or, again, of the independence of the *communia* from all temporal existence. The connection of all this with immortality comes about when we recognise that, in proportion as the soul ascends to the second and third levels of cognition, it fears death less because it is actually less open to destruction. The soul of the wise man is more completely immortal than the soul of the ignorant. The author points out that, in this view, Spinoza agrees with orthodox mediæval tradition, both Christian and Jewish, and that his theory is more self-consistent than that tradition in defining philosophy as *meditatio vitae* instead of the traditional *meditatio mortis*. Nor is Spinoza's theory to be called "mystic". For, mysticism is the "intoxication of the spirit", whereas Spinoza ascends to the knowledge of man's union with God through reason: it is not the heart but the head which drives him to a more pantheistic, self-consistent, rational concept of the Deity.] **Th. Ruyssen.** *Le droit des peuples à disposer d'eux-mêmes.* [This is the first instalment of a discussion of the problem how best to define the so-called "right" of self-determination said to be inherent in each people, and to show by what historic steps this right has come to be formulated and to find expression in positive international law—an evolution still far from finished. After a brief reminder of the well-known ambiguities lurking in the concept "people", the author finds the first traces of the right in Plato's *Atlantis*, and next in the history of the Jews in exile and the exhortation to them of the prophets to remain true to their Jewish individuality. Further development takes place through the application of the concept of natural right, which, though born in an air of cosmopolitanism, was transferred to the self-determination of peoples in the course of the mediæval attempt to reconcile two really antagonistic dreams, viz., the dream of universal domination under a single authority, and the dream of liberty, first for the individual and then for the individualised group. Vitoria, trying to find a moral defence for colonial expansion, examines the right of the Spaniards to conquer the New World and formulates for the first time explicitly the fundamental theses of self-determination. Next, Protestantism gives rise to a fresh wave of discussion of the foundations of sovereignty, in the course of which

several thinkers attempt to lay down a Christian theory of insurrection and of the right of a people to rebel against a bad ruler. Grotius drives home the point in his chapter *de bello subditorum in superiores*: in the last resort, a misgoverned people may have recourse to the *merum jus naturae*. Milton and Locke, among others, develop variations of this theme.] **A. Zawirski.** *Les logiques nouvelles et le champ de leur application*. [The author, who is Professor of the Theory and Methodology of the Sciences at the University of Poznan (Posen), here gives a very interesting account of the logistic system of Lukasiewicz and its applications in modern physical theory. Lukasiewicz developed a logistic system on the basis of three logical values instead of the usual two, adding "possible" as a third value to "true" and "false", with the symbols true = 1, false = 0, possible = $\frac{1}{2}$. Possible propositions, being neither true nor false, escape the laws of contradiction and excluded middle: two contradictory propositions may be equally possible. (The laws in this system are themselves merely "possible" propositions.) To illustrate the application of his system, Lukasiewicz assumes "psychological indeterminism". *E.g.*, assuming that a visit to Paris in 1935 depends merely on my will and that I have not yet decided what to do, the propositions, "I shall visit Paris in 1935" and "I shall not visit Paris in 1935", are equally possible, and, as possibilities, non-contradictory. It follows that in this system indirect demonstrations in Mathematics which rely on the principle that a proposition which implies the equivalence of two contradictories must be false, *e.g.*, $[p \supset (q \equiv \sim q) \cdot \supset \cdot \sim p]$, cannot be valid. So again, the well-known antinomies, like that of Burali-Forti, which involve the equivalence of two contradictories, disappear in this system. Later, Lukasiewicz expanded his system by introducing the notion of degrees of possibility and thus getting a logic with an infinite number of values from 1 to 0, and a new interpretation of the general concepts underlying the ordinary calculus of probability. With quotations from Heisenberg and Bohr, the author shows how this logic of infinite values might be applied to the clash between the undulatory and corpuscular hypotheses in modern physical theory. Similarly, the logical difficulties which led Meinong to distinguish complete and incomplete objects can be dealt with by this type of logic. And, obviously, it fits the recent tendency to regard physical laws as statistical and merely probable in various degrees. The article next deals briefly with the logical system of Brouwer, as elaborated by Heyting, and concludes with a discussion of the question whether the "indeterminacy principle" of modern physics is "subjective" or "objective".] **R. Ruyer.** *Sur une illusion dans les théories philosophiques de l'étendue*. [Accuses the philosophical theories which, finding it impossible to reach objective space from perceptual space analysed into extended sensations, deny the existence of space except as a datum for some mind or consciousness, of making the same mistake as is made by the physiologists who make a problem out of the fact that the retinal images of upright objects are upside-down. They forget that the comparison of object and image must be made by a percipient who perceives both and thus must have retinal images of both. Similarly, the philosopher who contrasts objective space with sensations which are "extended", has to introduce a mind on a higher plane for which the space which is supposed to be perceived through these sensations and these sensations themselves are alike objects, and as such distinguishable from each other. The author proposes to reject this dualism: "to perceive an extension is a way of being extended. Extension is the veritable thing-in-itself. It is not known, it simply is".

An "extended sensation" is simply a little "island" of objective space.] *Études Critiques*. **C. Blondel**. *Sur la philosophie de Ferdinand Buisson*. [A sympathetic review of the life-work of this champion of the "lay school" in France and of his life-long devotion to three ideals, viz., secularism (*l'idée laïque*), socialism, pacifism.] **Ch. Blondel**. *Le surnaturel et la nature dans la mentalité primitive, d'après M. Lévy-Bruhl*. [A careful survey and summary of Lévy-Bruhl's book under the same title.] Table of Contents. New Books, French and Foreign. Periodicals. Obituary: P. L. Laberthonnière.

REVUE NÉO-SCOLASTIQUE DE PHILOSOPHIE. xxxv^e Année. Deuxième série, No. 40. Novembre, 1933. **L. van den Bruwaene**. *Les idées philosophiques de Montaigne* (concl.) [Montaigne's hostility to "reason" and "science" is often thought of with some exaggeration, due to the mistake of taking the famous *Apology for Sebondus* as typical of the life-long attitude of its author. It rather represents his mood in a particular intellectual "crisis", and the most sceptical of its utterances are taken verbatim from Sextus Empiricus. If Montaigne shows himself hostile to speculative scientific constructions, he always attributes great importance to "judgment", which he opposes to the audacious speculations of "science"; and "reason" has its place, though a lowly one, in his ideal. Socrates, with his frank confession of his own ignorance of high matters, not Cicero or Seneca, is Montaigne's ideal of the wise man.] **Ch. Lemaitre**. *Bergsonisme et métaphysique*. [A highly appreciative study from the Thomistic point of view of Bergson's doctrine of freedom. The writer holds, as against some Thomist critics of Bergson, that Bergson's doctrine of freedom is completely acceptable if it can be shown that "in man an integral psychical synthesis implies free activity, and reciprocally, free activity implies an integral psychical synthesis". The article attempts to demonstrate these reciprocal implications.] **F. van Steenherghen**. *La II^e Journée d'études de la Société Thomiste et la notion de philosophie chrétienne*. [An account of the discussions of the possibility of a distinctively "Christian" philosophy at the meeting of September 11th, 1933, at Juvisy, with comments by the author, whose own object is to discuss the nature of the special contribution Christians as such can make to philosophy, while at the same time entirely avoiding the contamination of philosophy with theology. Assuming the reality of the Christian revelation, thinkers who accept that revelation by an act of faith can certainly make valuable contributions, as Christians, to philosophy, but the resultant philosophy will owe its merit, not to the fact that it is in some special sense Christian, but to the fact that, as a philosophy, it is true.] **B. Verhaege**. *Bibliographie de Victor Delbos*. Book Reviews, Chroniques, etc.

ERKENNTNIS. Band iii., Heft 4/6 (zugleich *Annalen der Philosophie*, Band xi., Heft 4/6). 1933. **M. Hartmann**. *Die methodol. Grundlagen der Biologie*. [Reviews recent attempts to restore biology to the position of a single body of principles. Criticises metaphysical unifications. Although the teleological ideas of whole and end (Zweck) are indispensable to biology, they are only heuristic or regulative, never constitutive.] *Dokumente über Naturwissenschaft und Philosophie. Briefwechsel zwischen Fr. Albert Lange und A. Dohrn*. [Interesting collection of fourteen letters, dated 1866-72, between the author of the *History of Materialism* and the founder of the Zoological Station at Naples.] **J. Popper-Lynkeus**. *Ueber die*

Grundbegriffe der Philosophie und die Gewissheit unserer Erkenntnis. [Notes, belonging to the seventies, for a work on epistemology, from the papers of P.-L., here publ. for the first time.] **H. Löwy.** *Commentar zu Josef Poppers Abhandlung.* **Y. Renqvist.** *Ueber die begriffliche Bestimmung der Sinnesinhalte (das Messen in der Sinnesphysiologie) und über das Webersche Gesetz.* **L. Chwistek.** *Die nominalistische Grundlegung der Mathematik.* [Chiefly on Russell's formulation of the theory of types.] **A. Pannekoek.** *Das Wesen des Naturgesetzes.* [The replacement in physics of causal laws by laws of statistical probability has not the revolutionary significance claimed for it; for both alike are not summaries of particulars but are general by abstraction and therefore only abstractly valid.] **H. Reichenbach.** *Die logischen Grundlagen des Wahrscheinlichkeitsbegriffs.* [The only solution of the problem of induction as set by Hume is to bring inductive inference under the logic of probability and regard it as a process of approximation, justified not indeed as certain but as necessary to the enunciation of any predictive propositions.] *Reviews.*

KANT-STUDIEN. Band xxxviii., Heft 3/4. 1933. **E. Fink.** *Die phänomenologische Philosophie Edmund Husserls in der gegenwärtigen Kritik.* [With a foreword by Husserl. Important reply to the criticisms of H.'s Phenomenology by Rickert and his school, especially Zocher and Kreis. The author is H.'s assistant and wrote the article at the request of H., who, having scrutinised it, wishes it to be regarded as an authoritative statement of his views.] **A. Müller.** *Die Ueberwindung des Utilitarismus in der Biologie der Gegenwart.* [Survey of recent German biological writings to illustrate the tendency to conceive life no longer as mere conservation through adaptation but as self-governing and self-developing—the tendency towards an æsthetic and "verstehende" biology.] **H. Plessner.** *Das Problem des geistigen Seins. Nicolai Hartmanns neues Buch.* The reviews include an 8-page survey of recent literature on Nietzsche by Prof. H. Hasse. The notes include an announcement, with evidence, by Dr. Michelis, that Kant was a private tutor in the house of a pastor in Judtschen 1746-47. Appendix—a second classified bibliography of philosophical articles and books in the chief cultural languages.

IX.—NOTES.

AETERNITAS.

TO THE EDITOR OF "MIND".

SIR,

More time has elapsed than I had realised while I have been considering whether Professor Broad's treatment of *Aeternitas* in the second and third issues of Vol. XLII. of *MIND* ought to be regarded as an expanded and promoted review, which should not be answered, or as independent articles demanding a detailed formal reply. If its extent and position in your pages favoured the interpretation more flattering to the book, the general method and occasional *ex cathedra* tone warned me to remember my place with humility and in silence; and so I had begun to settle down to the former interpretation in spite of Dr. Schiller's suggestion that I might be "on (Professor Broad's) hands for some time yet" (Vol. XLII., p. 501). But as inquiries have continued to reach me as to when and where my "reply" was likely to appear, I am constrained to ask you to allow me to escape between the horns of my dilemma in this semi-ceremonious manner, *viz.*, not by a detailed and formal consideration of Professor Broad's rather complicated *éclaircissement* and examination of what is in the main incidental in the book, but by a brief comment on two extraordinary representative and summary judgements expressed by him, with some journalistic skill, at the very end of the first "instalment", and again towards the end of the second:

(1) "The theory . . . of Prof. Hallett can be made more or less intelligible . . . ; what is lacking is any attempt to show cause why one should believe it" (Vol. XLII., p. 169).

(2) "Either . . . Prof. Hallett has no coherent theory of time and eternity; or . . . he has lamentably failed to state it intelligently; or . . . I am quite exceptionally stupid" (Vol. XLII., p. 317).

I call these "extraordinary" judgements because a *philosophical* treatise on *Eternity* that attempts to give no *reason* for belief in its conclusions, and contains no intelligible account of *Eternity* should be beneath contempt, and Professor Broad must indeed be "quite exceptionally stupid" to spend nearly forty pages of your valuable space in elaborating his judgement. Is the whole book, then, no more than a farrago of disconnected statements, or is Dr. Broad naive enough to believe that it is possible in metaphysics to elaborate a complex speculation, and then having completed that part of the business to turn finally to the separate question of its truth or falsity? Surely, as I have elsewhere remarked (*Creativity, Politics, and the A Priori*, p. 172 note), "every step of the deduction is . . . to be taken as helping to establish the result. *Truth does not arise as a separate question*". For in metaphysics the question of truth, in fact, comes first of all and the elaboration follows, and I think that Dr. Broad has allowed his impatience with speculative complication (which doubtless he feels as vigorously as others of us feel exasperation at his own idea of explanation by prolix analytical complication) to blind him to the starting-point of my whole speculation. Here, if anywhere, he will find my Achilles-heel.

The inference from which I set out may, of course, be fallacious, but this at least can be said of it, that it has been before the philosophical public now for not less than a quarter of a millenium and remains unrefuted: I at least have not heard of the refutation of its main contention, but only of that of certain idealistic accretions that have hampered its acceptance. It concerns at once the nature of truth and the character of the Real, and it runs: the truth or falsity of an idea, or proposition, or objective content (or however you choose to name that which is true or false) cannot be determined under the principle of congruence by directly comparing it with the Real, because the latter is only available to us for comparison or intellectual manipulation through the former. We cannot stand outside of knowledge and place its objective content side by side with the real thing for purposes of detailed comparison. Thus the question of truth or falsity must be otherwise determined: that is to say the criterion of truth must be found within the realm of ideas, propositions, objective contents, or what not. *Est enim verum index sui et falsi*. Now I know of no satisfactory criterion other than that of completeness and coherence, i.e., perfection; for the mere *conviction* of truth, or *feeling* of certainty, not so derived, can be no more than a *fact* and no *criterion*. Facts may be stubborn "thats", they are not dependable "whats". Hence it is argued that an idea, proposition, objective content, etc., is true in proportion to its perfection; and *the Real is the perfect*. The whole of my speculation issues, I say, from this Ontological Argument, and whatever I have attributed to the Real I have attributed because it seemed to me that its perfection demanded it. I may well have been wrong in my attributions because what I have judged to be a perfection is not truly so; there I am open to correction—*ego non praesumo me optimam invenisse philosophiam; sed veram me intelligere scio*.

It is astonishing how difficult it is to convince those brought up in the empiricist tradition, even when they have themselves rejected its main contention, that metaphysical speculation rightly understood is not "construction" from a basis of particular facts up to a tottering pinnacle of theory. Even those who recognise with Bradley that in any such construction the factual foundations and lower storeys are progressively dissolved away as the building rises, still think of the process under a modified building analogy, though they see that it cannot be true that certainty is maximum at the bottom. But true metaphysical speculation is rigorous intellectual analysis of the structure of experience *as such*, taking its content from the analysis of *human* experience. For a perfect knower even the element of construction thus implied would be eliminated, and the whole known by direct intuition and analysis. Metaphysics is not construction but *analysis*, and it is because I have adopted this analytical procedure from an assured truth to its detailed implications that it seems to me that Professor Broad's statement that no argument is forthcoming why my theory should be believed is, to use the phrase current among the "bright young things" of philosophy to express disagreement, pure nonsense.

I turn next to Professor Broad's second assertion, that my theory of time and eternity is incoherent or unintelligible, that is, I presume, that it is self-contradictory, or deficient in essential elements, or too complicated for Dr. Broad's understanding. If I thought it was the first I should indeed be dismayed, and I think that Dr. Broad should not have left this possible interpretation of his remarks in doubt. As to its complication I cannot believe it to be too great for Professor Broad's competence. It must therefore be deficient in essential elements; and this, I think, is

what Dr. Broad really means, for he seriously urges that "no theory of time and eternity which cannot give a plausible answer, at least in outline, to such questions" as the eternal relations of Professor Broad, his father, and his grandfather, "is worth serious consideration" (Vol. XLII., p. 316). I do not wish to make the obvious retort but to take this judgement quite seriously. I do admit the interest and importance of this example of temporal process, and, indeed, I made some considerable effort to deal with it during the composition of my book. In the issue, however, I found that it was necessary to omit the whole topic because of the very unsatisfactory state of scientific theory about the mode of unity embodied in the father-mother-child relationship. I do not profess to know more about such matters than the biologists can tell me; doubtless I know much less; and as I am a finite being within an infinite universe I cannot deduce such matters from first principles: and in the nature of the case, on my theory of the relations of time and eternity, (according to which time is the mode of disorganisation and degradation of eternity arising from relation to a finite referent within the eternal being), no account can be given of the proper synthesis of temporal processes except in relation to a genuine whole or macrocosm of which the temporally successive entities are real parts or microcosms. But, I ask, why should my (or indeed human) ignorance of the nature of particular sets of wholes and parts render the metaphysical deduction of time "not worth considering"? I do not think that any "example" can do that. I do not even know whether this or that "man" is a primary part of *natura naturata*, though there is evidence that strongly suggests that he is not. Certainly the attempt to make individual men subordinate to social wholes possessing a higher degree of unity and completeness than the individual person, fails, as I have noted in *Aeternitas*; but the facts of human sexual reproduction point to a dependence that may or may not indicate an individual of wider and profounder synthesis, and not identical with *natura naturata*. I do not know, though I cannot believe that the reputed continuous and immortal germ-plasm constitutes such an individual. But are we to be debarred from every attempt to explain the emergence of time within an eternal whole, or the synthesis of process as quality, until such time as a special, subtle, and very complicated example becomes clear to biologists, and through them to metaphysicians? As well postpone all geometrical science until physicists have made precise measurement of the geometrical properties of some actual entity. Metaphysics no more than mathematics—or indeed any pure science—works by means of actual examples. It *applies* to examples, but the application is necessarily hypothetical and approximative—as the very notion of an "example" implies. But although truth is not assured by the use of examples, it may be rendered more humanly attractive; and it was in this hope that I did venture in my book, with great misgiving, to suggest an empirical example of the relations of time and eternity. The undulations that are associated with the colour red could not, as such, be made directly visible to a human eye by the use of any optical mechanism; but even if we conceived an eye that could see them directly, that eye could not see *both* the undulations and the red: and I argued from this that the red is the synthesis of the undulatory process—is an "eternal object" relative to and perfecting the temporal vibrations. That it is not eternal in an absolute sense is due to its partiality in an even wider whole. The fact is, as this example shows, that from the very nature of my speculation *it cannot receive empirical exemplification*: for the congruent eternal and temporal entities

are objects for minds hierarchically distinct. But my withers are unwrung by this empirical accident, for truth is essentially *a priori* in form and structure, even where its content is *a posteriori*—as must frequently occur in the knowledge of a finite mind.

While I am dealing with this question of examples, may I make reference to Dr. Broad's treatment of the one or two symbolic examples that I ventured to include here and there in *Aeternitas* to give unsuitable but summary form to my argument? One who had not read my book might well judge from Dr. Broad's review of it that it consisted nearly entirely of such symbolic deductions, and I much regret that he should have allowed his own prejudices (as he must allow me to style them) to cause him to take my incidental, rare, formal examples as if they were substantial argument. I am not among those who cannot make reference to a proposition without calling it "the proposition *p*", or who imagine that symbolic reasoning is adequate in metaphysics. Such reasonings must be inadequate, or intolerably complicated, in any science except where the entities studied are unitary, monadic, "bead-like" in character, as in certain branches of mathematics. An extension to adjacent regions such as dynamics may be possible without serious misgiving, but nothing but harm can accrue to metaphysics by any dependence on such methods of deduction. That my own slight use of symbolic expressions was merely exemplificatory and summary might have been gathered by Professor Broad from the very plain hint contained in the fact (on which he erects an argument against me), *viz.*, that the symbolism at different places are quite different in character. His laboured attempt to bring them together is necessarily doomed to failure since they were never intended to form a single deduction. I have often been criticised for not commending my reasoning to my readers by the use of examples. If that is a fault it has at least been deliberate, for "answerers" love an example that they can pick to pieces without taking the trouble to examine the theory exemplified; and the effect of these few formal examples on the trained mind of Dr. Broad will not encourage me to depart from my general practice. Symbolic expressions and reasonings have, I think, a useful function in summarising what has been prolix in literary deduction, but in themselves they have no value in metaphysics, and taken alone may be entirely mischievous by reason of their pluralistic presuppositions and implications. The Real is not composed of "beads", and to argue as if it were is to mistake intellectual embroidery for philosophy. The "parts" of nature are not sections but microcosms. Francis Bacon may have been right in making mathematics a branch of metaphysics, but metaphysics is certainly not a branch of mathematics, and those who think otherwise, are labouring, it seems to me, under the influence of what I will style the *Idola abaci*.

In conclusion, may I say that I am not unmindful, nor in a sense ungrateful for the many complimentary things with which Professor Broad has considerably sugared what he must have intended as a strong corrective. That I have devoured the pear and left the pip makes me only appreciate these things the more, though I cannot but think that to the general reader of *MIND* they will suggest the adage: *lucus a non lucendo*—unless, indeed, they are taken as no more than examples of Broad humour.

I am, etc.,

H. F. HALLETT.

King's College, London,
4th March, 1934.

MIND ASSOCIATION: ANNUAL MEETING AND JOINT
SESSION WITH THE ARISTOTELIAN SOCIETY.

THE ANNUAL MEETING of the Mind Association will be held this year at University College, Cardiff, at 5 p.m. on Friday, 6th July.

It will be followed by a JOINT SESSION WITH THE ARISTOTELIAN SOCIETY, for which the following arrangements have been made:—

FRIDAY, 6TH JULY.

At 8 p.m. Chairman: Prof. L. S. Stebbing.

Address by Prof. J. W. Scott. "Humanity and History."

SATURDAY, 7TH JULY.

At 10 a.m. Chairman: Prof. J. W. Scott.

"The Element of Immediacy in Knowledge." Prof. R. I.

Aaron, Prof. G. Dawes Hicks, Prof. C. M. Campbell.

At 2 p.m. Chairman:

"Liberty and Discipline in the Modern State." C. E. M. Joad,
John Strachey, and a third.

At 8 p.m. Chairman: Mr. R. B. Braithwaite.

"Communication and Verification." Prof. L. S. Stebbing,
Prof. L. J. Russell, Prof. A. E. Heath.

SUNDAY, 8TH JULY.

At 10 a.m. Chairman: Mr. H. W. B. Joseph.

"Is Analysis a Useful Method in Philosophy?" M. Black,
J. Wisdom, M. C. Cornforth, Prof. G. E. Moore.

At 8 p.m. Chairman:

"Artistic Form and the Unconscious." J. M. Thorburn, A. H.
Hannay, P. Leon.

Particulars regarding accommodation and membership can be obtained from Prof. J. W. Scott, University College, Cardiff.

LEWIS AND LANGFORD'S *SYMBOLIC LOGIC*.

Contrary to what I suggest in my review of this book in the last number of *MIND*, Langford does notice (footnote to p. 318) that 'exists' is in "an unusual context" in "Canine exists". I apologise for this mistake.

J. WISDOM.